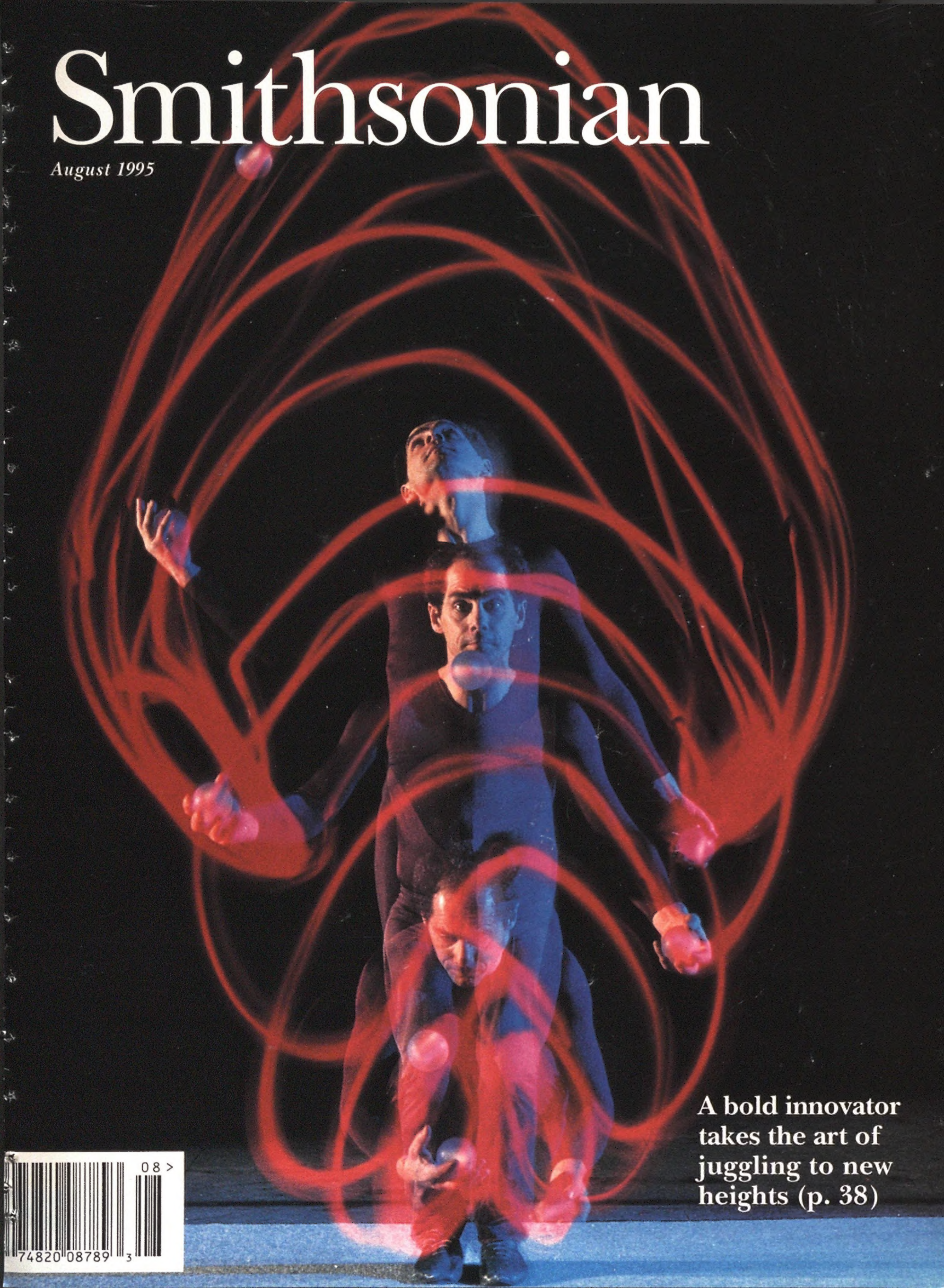
Smithsonian

August 1995



A bold innovator takes the art of juggling to new heights (p. 38)

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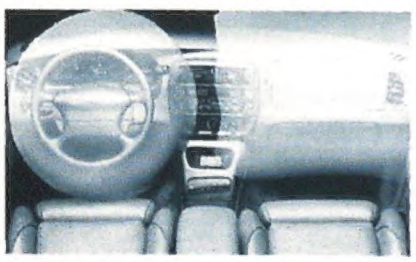

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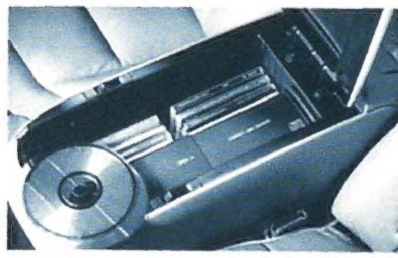

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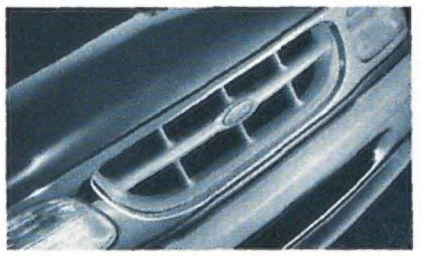

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August 1995

Smithsonian

Volume 26, Number 5

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SUBSCRIPTION PRICES: United States and possessions: $22 a year. Canada and all other countries: add $13 for each year. 80 percent of dues is designated for magazine subscriptions. Current issue price is $3. Back issue price is $5.
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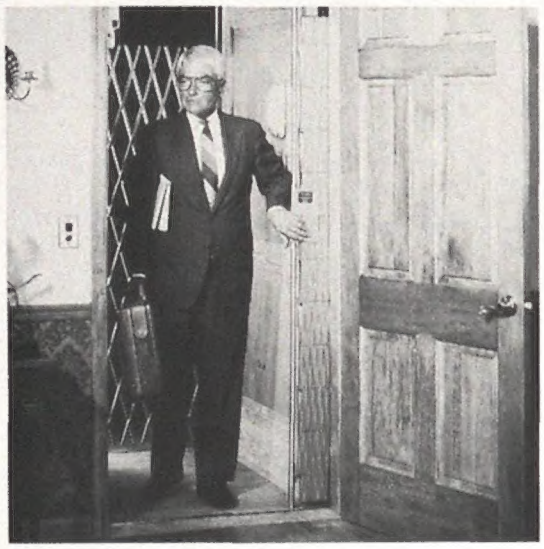

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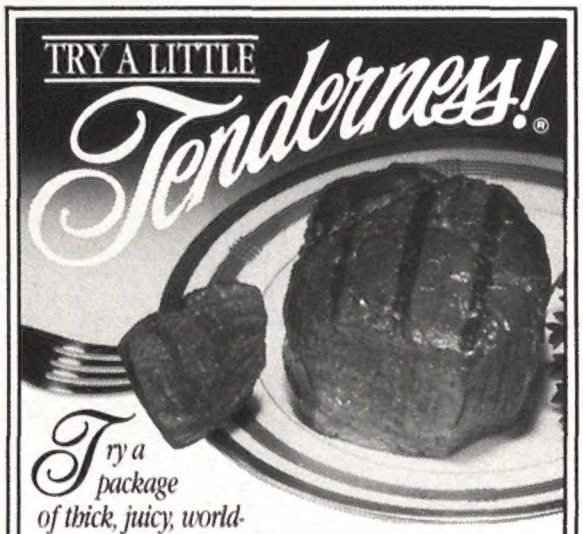

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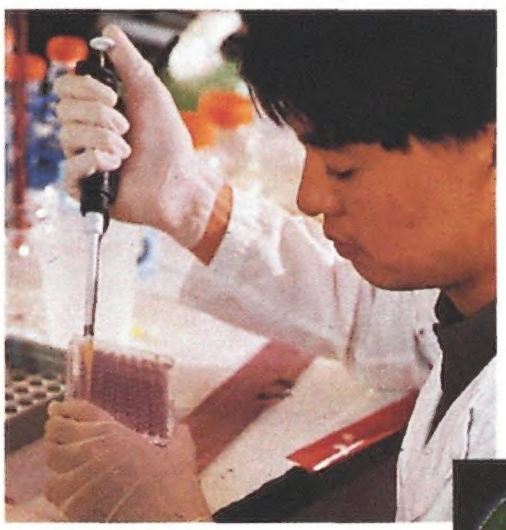
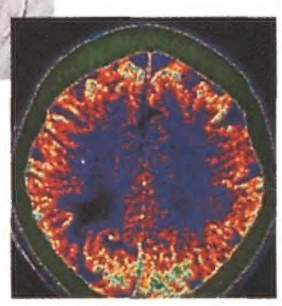
ONCE A STROKE OCCURS, THE DAMAGE IS DONE. DOES IT HAVE TO BE?

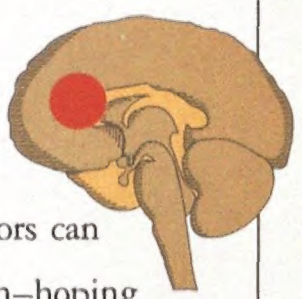
New medicines currently being tested may be able to stop destruction of brain cells in the crucial hours after a stroke.



Scientists from pharmaceutical research companies discover more than 9 out of 10 new drugs.

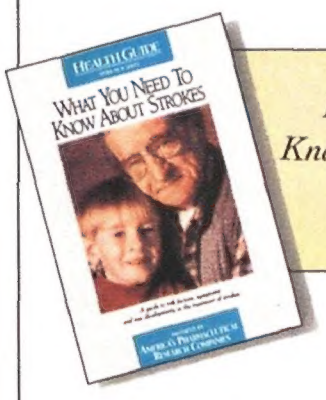


When a person suffers a stroke, reduced blood flow damages part of the brain. Then a powerful chain of chemical reactions occurs. Called the *glutamate cascade*, it rains terrible destruction down on brain cells in the initial days after a stroke, causing further damage. As glutamate levels build, excess calcium and a toxic form of oxygen destroy brain cells. Today, doctors can only stand by and watch–hoping that the cascade will end before massive damage occurs. But there is hope. Pharmaceutical company researchers are currently developing 19 new drugs that could help reduce the terrible damage to the brain that occurs after a stroke.



prevention

Anyone can have a stroke. But age, gender, race and medical history play a role. Some people also experience the following warning signs: temporary weakness or numbness on one side of the body, blurry or dim vision in one eye, a sudden, severe headache, or speech difficulty. Seek immediate medical help if you have any of these symptoms. Fortunately, there are things that you can do to reduce your risk of a stroke: Quit smoking • Exercise regularly • Maintain a low cholesterol diet • Limit alcohol.



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Secretary Heyman's comments

Smithsonian Perspectives

The Festival of American Folklife gives us a chance to understand who we are, and also to celebrate our humanity

I explored in this column in June the Smithsonian Folklife Festival. I return to it now, having in the past few days participated as Secretary in my first Festival. Four cultures were featured: Cape Verdean; Czech; Russian "Old Believers"; and American Indian. It has been fascinating to speak with representative leaders of each contingent (including the President of Cape Verde). It has been even more fascinating to walk around the Mall unofficially (and largely unrecognized) to see and hear the offerings from the perspective of typical visitors to the annual event.

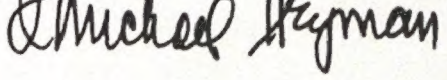
I have been struck with the importance of musical performance to folk culture, and the extent to which tradition seems to call for audience participation with artist-performers. This was especially noticeable in the case of Cape Verdeans. Cape Verde, a nation of islands off the coast of Africa, became independent of Portugal 20 years ago. Its population is about 375,000. In the United States some 400,000 people—most of them living in Massachusetts—trace their roots to Cape Verde. Many of the latter are here in Washington as volunteers helping to "translate" Cape Verdean culture and crafts for Festival visitors. The culture seems a mixture of African and Portuguese forms. Their music is rhythmical and vivid, and with both native and American Cape Verdeans, participation by clapping and singing is enthusiastic. That special audience is deeply involved (not unlike regional American audiences with folk music or larger youth audiences with forms like rap and rock). What stands out is the importance of music as an ingredient and expression of popular culture, the universality of the phenomenon, and the activism rather than passivity of the "listeners."

The experience with the Cape Verde presentation was true also of the other cultures: the most analogous was the Czech, whose polkas and other dances caught hold of the audiences. Primarily, of course, it was those of Czech ancestry who participated most vigorously, but there were many others, too, who got caught up in the spirit of the occasion.

Audiences were much less participative in musical presentations by the Russian "Old Believers" (largely chant-like) and by the American Indian women. The rapt attention of large groups of visitors, however, suggested their immersion in the sound and a communication that reverberated with meaning that transcended cultural frameworks.

As I walked around and joined others listening to, observing and enjoying the music, structures, crafts, explanatory texts, costumes and food, I better understood how powerful living examples transmit culture. This will no doubt also be the case next summer when the Festival plans to feature Iowa, the American South and the Smithsonian itself.

As I said at the opening ceremony, it is through the Festival of American Folklife that the Smithsonian shows that history does not stop, that the life of people cannot be reduced to an object in a case or a sign on a wall. It is through the Festival that people speak for themselves—about their lives and accomplishments, and about how they have turned everyday experience into beauty. Further, in a most direct way, the Festival gives us a chance to celebrate our humanity, learn from one another, and appreciate and understand who we are. These days that is no simple effort.



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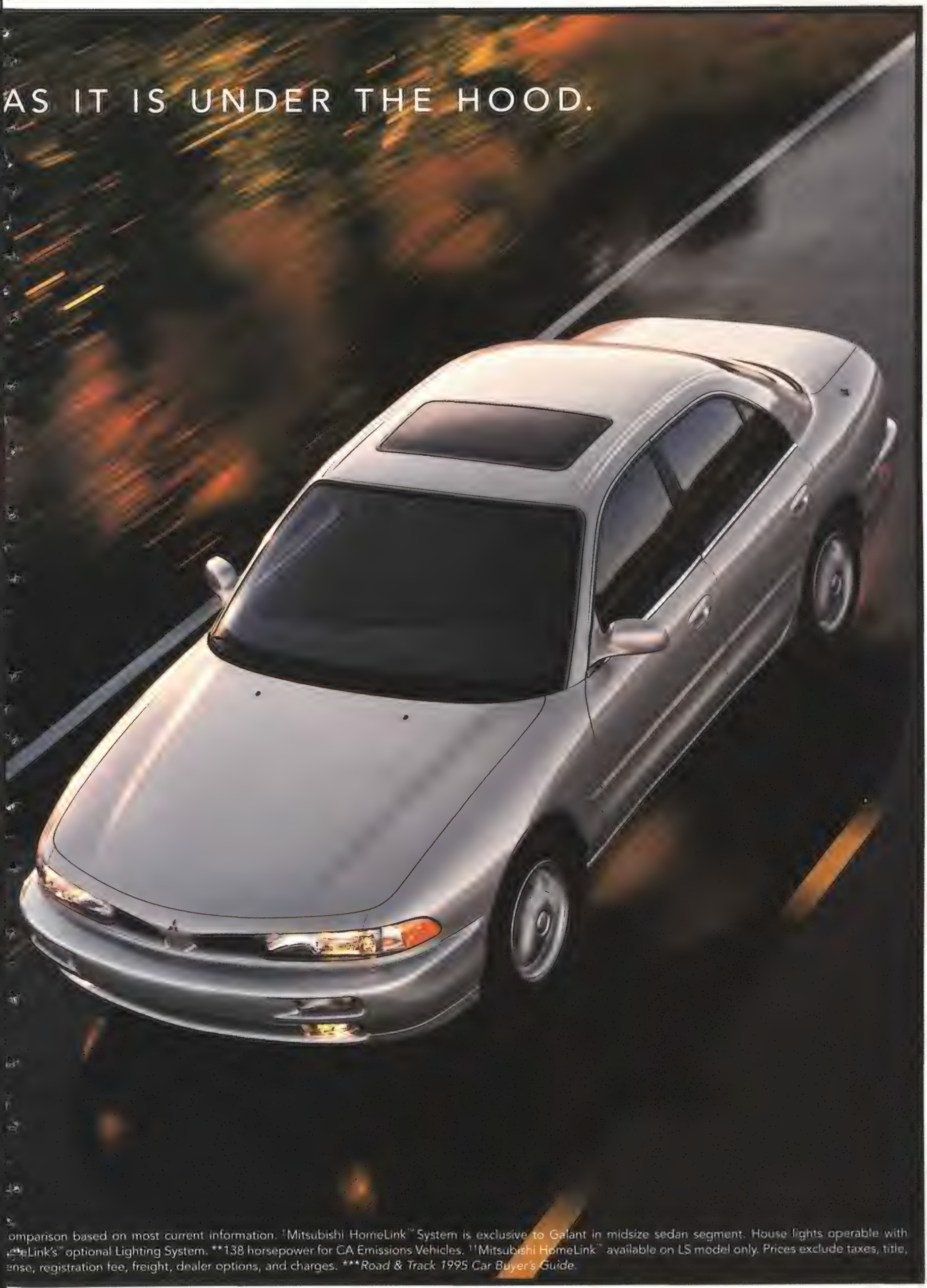

omparison based on most current information. †Mitsubishi HomeLink™ System is exclusive to Galant in midsize sedan segment. House lights operable with eLink's™ optional Lighting System. **138 horsepower for CA Emissions Vehicles. ††Mitsubishi HomeLink™ available on LS model only. Prices exclude taxes, title, ense, registration fee, freight, dealer options, and charges. ***Road & Track 1995 Car Buyer's Guide.

Letters to the Editor

Cover

Dear Sir: I see a remarkable similarity between the two very dissimilar subjects of your May and June covers (below). May's least bittern by William Burt and June's blown glass *Yellow Pair* by photographer John Bigelow Taylor had a common inspiration that was not calculated, I'm sure, but still captured the eye in an example of high art.
Pete Pederson
Arcadia, California

Dear Sir: The June 1995 cover looks like an elegant penguin that is officiating at a baptism.
George Bergin Reynard
Riverton, New Jersey

German POWs

Dear Sir: I could not ignore Jack Fincher's article "By convention, the enemy within never did without." Having been captured in the Philippines, following the surrender of Bataan and Corregidor, I was a prisoner of war in Japan from 1942 almost to the end of 1945. I was transferred from Manila's Bilibid City Prison to Japan (Kobe) along with 49 other Americans in November 1942.

The camp comprised 600 British, Australian and Dutch prisoners who had been starved for about a year. We Americans were starved from the moment we arrived. Three times a day we were fed a half-teacup of maggoty white rice and a small canteen of black, unsalted and almost indigestible soup made from boiled sweet potato leaves. A captured physician estimated our daily intake measured 600-800 calories.

By May 1943 more than 300 of the 650 prisoners had died of malnutrition, beriberi, diphtheria, pneumonia and dysentery. Compare our treatment with Mr. Fincher's description of the German POWs' lot (page 133): "There were . . . mess halls . . . infirmaries . . . hospitals, dental clinics . . . and playing fields for soccer and volleyball."
Lt. Col. Robert G. Bjoring, USAF (ret.)
Menlo Park, California

Dear Sir: During World War II, I was a litter bearer with the 84th Division—the Lincoln Division, or Railsplitters—and was with them from the time we landed in France until we came to the Elbe River and were forced by agreement to stop there. In between we had a little "vacation" in the Ardennes, better known as the Battle of the Bulge. Let me tell you a few things about Nazi Germany's observance of the Articles of the Geneva Convention.

When we started off in Holland, some Germans put up a white flag of surrender. When our men came to take them prisoner, the Germans shot some of them dead. Our soldiers reacted in kind.

One of our medics was shot through the red cross on his helmet and killed. While wearing a red cross on both my helmet and my arm, I was shot more than once, including the time I went to see whether a German was alive or dead. Another time a German plane strafed a line of well-marked ambulances, then banked off and sent a barrage of machine-gun bullets parallel, fortunately, to my body as I lay in a field.

After the Germans shot our troops as they descended in parachutes from their damaged plane, we responded similarly.

By our honoring the Geneva Convention more lavishly than required, the United States showed little understanding for what was happening in Europe.

I may take a lot of flak from your other readers for this letter, but after 50 years of carrying my feelings around, I suppose it is not too bad to vent them.
Howard Carl Gold
Newington, Connecticut

Dear Sir: I read your German POW article with great interest and can assure you that everything in the story is accurate. Beginning in July 1944, I was a German prisoner first at Fort Custer and later at Camp Ellis in Illinois, where the hardcore Nazis from the Afrika Korps threatened us with the death penalty, saying they would report our names to the Gestapo after the "German victory."

You did not mention the Special Proj-

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ect Center in Fort Eustis, Virginia. There, 2,400 anti-Nazi Germans went through a six-day course in American democracy, which was conducted by German professors. Those of us who passed a final test were discharged immediately after the war into Germany.

I was always amazed at the stupidity of Germans who tried to escape and make it back to the war. I was happy to be here and to return to this great country in 1957.
Ernst W. Floeter
Grand Ledge, Michigan

Dear Sir: In 1965 I had a voice teacher in Berlin named Harry Gottschalk, who was a former soldier in Rommel's Afrika Korps. One afternoon he described Camp Swift, Texas, where he'd been a POW. He described the privileges he had enjoyed and then showed me a picture of himself with one of his guards, their arms around each other's shoulders, smiling brightly. On the back, written in flowing fountain pen script, was the guard's farewell: "This is victory when enemies become friends."
Bernie Huebner
Skowhegan, Maine

Around the Mall

Dear Sir: It was shattering to read how considerately the United States treated 375,000 German POWs and how callously we refused safe haven to 936 Jewish refugees aboard the ill-fated S.S. *St. Louis*, 600 of whom subsequently perished in Nazi concentration camps. The juxtaposition of Jack Fincher's article and Michael Kernan's column presents a chilling and shameful irony.
Norman Wasserman
Brooklyn

Dear Sir: My mother, my sister Edith and I are survivors of the ordeal and were aboard the S.S. *St. Louis* with Moritz Schoenberger, who left with us from Antwerp, Belgium. We were en route to meet my father, who was already in Cuba, and wait for the U.S. Government to call his quota number. After we were forcibly turned back to Europe, the United States admitted my father to this country in January 1940. He sent for us and we left Antwerp in March. We were fortunate—in May 1940, Holland and Belgium fell to the Nazis.
Egon J. Salmon
Staten Island

Freight trains

Dear Sir: As a Nebraska lad who grew up on the wide-open prairies, I am glad the freight train of my youth is still safe. Maybe some things really change for the better after all.
Donald D. Edmisten
Fairfield, California

Dear Sir: Thanks for the absolutely terrific piece on modern railroading by Per Ola and Emily d'Aulaire. I'm sure their well-written article is a revelation for many of your readers. Moreover, the writers' lively style caught perfectly the mood of the heavy-duty, contemporary railroading.

You made one major gaffe with regard to African-American folklore: John Henry did *not* drive spikes. He drove holes into rock with hammer and drill for blasting. As the famous folk song says, John Henry competed against a steam drill (not a steam hammer) while the "Big Bend Tunnel on the C&O Road" was being blasted. Amtrak's "Cardinal" still runs through the tunnel, and a memorial to John Henry stands at one end.
Bill Withuhn
Curator, Rail Collections
National Museum of American History

Object at Hand

Dear Sir: Why was there no photograph accompanying Adele Conover's mention of the giant python trying to swallow the elephant (page 22)? Was he working from the front or the back?
Daniel McGuire
Hudson, New York
No photograph of that particular scene exists, but we can tell you the python played tug-of-war with the elephant's hind leg. Ed.

Last Page

Dear Sir: At the risk of being considered intellectually bankrupt, I must admit that every time SMITHSONIAN arrives, I head straight for the back. My day has always been brightened by the final column, which I use as a sort of buffer between the everyday world in which I live and the world where your magazine takes me. That is, until I read Daniel Pinkwater's June essay "When I Said I Wanted a Dog, Bootsie Was Not What I Had in Mind." Depressing.
Eric Kervina
Cannon A.F.B., New Mexico

Dear Sir: "When I Said I Wanted a Dog" is one of the funniest pieces of prose I have ever read.
David Edwards
San Diego

Dear Sir: After my German shepherd died, I studied different breeds for a few years before deciding on a Boston terrier. Beauty being in the eye of the beholder, my "Bella" is the cutest thing I've ever seen. Like Bootsie, she occasionally wheezes, snorts, snores or experiences flatulence, but then, do not we all from time to time?
Janet Bassetti
Vineland, New Jersey

Dear Sir: In defense of Bootsie: we can't all be golden retrievers; some of us *have* to be terriers.
A. S. Ammann
Mineola, New York

Dear Sir: Without being unkind, might I suggest that Bootsie's behavior was simply a reflection of her dysfunctional and joyless surroundings? I'm relieved that she ran away.
The Rev. Dr. William H. Risinger
Fort Worth

Dear Sir: I grew up with a Boston named "Dickie," who sang. Hearing him yowl with the music startled me at first, but soon he learned to sing on command. It has been more than 50 years since we were last together, but I can still see Dickie performing.

My positive experience should cancel out Mr. Pinkwater's unhappy one.
Samuel O. Sapin
Sherman Oaks, California
Mr. Pinkwater's Malamute mix, Jacques, replies: So my owner is an idiot. This is news? He forgets to take me to the park, and when I remind him, he pretends he doesn't understand. Often he goes for car rides and does not take me with him. Besides his sins of omission, he tortures me, subjecting me to baths, which are completely unnecessary.

In spite of all this, we dogs have to make allowances for our humans. They're a pitiable breed, but we love them anyway. It's our job. Therefore, while it's nothing personal, I feel obliged to bite everyone who wrote a letter complaining about the essay.

Send mail for consideration in this column to Letters Editor, SMITHSONIAN Magazine, 900 Jefferson Drive, MRC 406, Washington, DC 20560, or transmit via e-mail to simag.edmail@ic.si.edu.

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ADVICE & DISSENT

They're The McLaughlin Group. Each with a view that's contentious and contagious. (clockwise from left) Jack Germond, Clarence Page, John McLaughlin, Eleanor Clift, Morton Kondracke and Fred Barnes.
Made possible by a grant from GE.

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Around the Mall and Beyond

By Michael Kernan

Plant and the butterflies will come: this summer the Smithsonian's new garden welcomes its winged visitors.

Butterfly Garden. Just the name makes you smile.

It really is almost as if the butterflies were growing out of the tips of the blossoms, delicately fluttering their outrageous wings as they suck the nectar.

The idea is not new, and for some years now books telling how to start your own butterfly garden have been on the market. But the Smithsonian's garden, on the Ninth Street strip east of the National Museum of Natural History (NMNH), is new this summer. This delightful place was inaugurated earlier this year with the release of many dozens of painted lady butterflies at a spectacular kids' party. Besides 75 Young Associates, practically everyone Smithsonian was there. After all, five different groups and the Smithsonian Women's Committee have had something to do with this magical stretch of garden, a place that will attract an assortment of colorful little winged visitors three seasons of the year.

Naturally, the gardens people were involved. "That area always had lovely flowers," recalls Nancy Bechtol, chief of the Horticulture Services Division, "but it was sort of a catchall. We wanted something more meaningful than just pretty flowers."

Butterflies and gardens had been bouncing around in a number of heads here. Gardening Supervisor Walter Howell even drew up some plans four years ago. Over in the Department of Entomology, the thought had occurred

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to Don Harvey and Liz Klafter, each of whom pursues the art of butterfly gardening at home. Don's urban garden is on Capitol Hill and Liz's is a more spacious spread out in Maryland.

"I didn't know anything about Howell's plans," Bechtol says, "but one day just as I was thinking about how that garden could better relate to the Natural History museum, Don Harvey called with this neat idea. So I mentioned it to my staff and learned about Howell's drawings."

Horticulture, NMNH's Entomology and the Office of Exhibits worked together on the garden, while the Insect Zoo and the Smithsonian Associates joined up to plan the party. Collaboration of this sort is most unusual at the Smithsonian or anywhere ("It's the territorialness of it, I guess; it's ingrained in people—literally, turf wars"), but all was harmony, or almost.

"It was sheer pleasure working with Don and Liz," reports Bechtol. "We needed their expertise to match the various species to the plants they are attracted to. We got a grant from the Smithsonian Women's Committee and the Office of Exhibits wrote and produced the signs—a big item."

The garden is 400 feet by 8½ feet, and even though it runs along the Ninth Street underpass, the butterflies won't be as tossed about by traffic slipstreams and smog as they might be elsewhere.

The garden is divided by pairs of American holly trees into five sections: the orientation area, a wetland, an urban garden, a wood's-edge habitat and a meadow. Each mini-environment attracts different kinds of butterflies, explains Bechtol. And note this, please: she's hoping that as many as 86 species of butterflies will visit the garden at one time or another.

"That's potential," she says. "That's how many have ever been actually spotted and counted in Washington. We know they're migratory, but their native habitat is right here. We have 36 pairings of butterflies and plants."

Come on. You are pulling my leg. I have lived in Washington 23 years, and I have certainly never seen anything like 86 varieties of butterflies. More like three, and one was probably a moth.

Not at all. "The reason you only see a few varieties," explained Horticulture's landscape architect Paul Lindell, "is that in the name of progress we destroyed the wetlands and meadows. So in the city you see only those types that eat the kinds of plants allowed to grow there, which are kind of limited."

Ah, so. We are talking about weeds. Butterflies love to hang out on the edges of fields and pastures, where the weeds grow happily. In a city, a field is not a field but a vacant lot and is apt to be paved over or mowed.

Now, a weed can be many different things, and there are people who declare war on anything that comes up that isn't the zinnias or marigolds they planted. But to butterflies, those independent plants, from clover to dandelions, from crabgrass to viper's bugloss, are gourmet-quality foods.

How do you get the different butterflies to gravitate to the different sections of the garden?

"Plant and they will come," says Horticulture's entomologist Mark Hardin. "Most butterflies are very host-specific. They like just one or two kinds of food."

The monarch, for instance, the famous big orange creature with black borders that looks like a Tiffany lamp, loves milkweed in its larval stage. As an adult, the monarch sucks the nectar from the flowers of goldenrod, milkweed and many others. The zebra swallowtail larva eats nothing but pawpaw and as an adult feeds on nectar. The small larva of the white cabbage, or checkered, butterfly goes for cabbage leaves, which would seem only right, along with broccoli, mustards and cress, but it too switches to nectar when it grows up. Most adults prefer nectar, and the garden will feature flowers with enough nectars to make a butterfly giddy: cinquefoil, dandelion, geranium, red clover, sumac, pepperbush, mints, aster, and some plants that I'd never heard of.

Many hundreds of plants will go into the Butterfly Garden. Several varieties will be replenished and some will be replaced seasonally as the residents, both larval and winged, require. You understand, the Butterfly Garden is a three-season proposition, with nectar sources such as dandelion and wild geranium available in the spring, pepperbush in the summer, and goldenrod in the fall.

"At our greenhouses," Bechtol notes, "the staff couldn't believe some of the stuff we were asking them to grow for us. Alfalfa, clover, weeds and forage crops—things that we had to call some farmers to get advice on. We needed to know how to grow alfalfa throughout the summer. There will be willows and other trees too. We want the garden to

The Wonder of Iron-3

Some of the most beautiful sounds of iron are the chime of wind bells and the melodic bowing of the cello.

The Sound of Iron

By Tomoyuki Kohara

For many, the term "metallic sound" connotes discomfort, disharmony, fear and stress. When we speak of the sound produced by iron, many people think of the harsh noises emanating from ironworks and construction sites.

In suspense and thriller movies, metallic sounds are used very effectively to create an atmosphere of tension and increase the sense of anticipation, making the moviegoers edgy and excited. The hard, shrill sounds produced by iron and other metals are also indispensable elements for conveying the mental stress and discord felt by movie heroes and heroines during tension-packed scenes.

On the other hand, there are also many iron sounds with pleasant associations. Iron is a major element in the music produced by many popular musical instruments.

Pianos, mandolins, violas and steel guitars all use the vibration of steel strings resonating with the instrument to create beautiful sounds. Glockenspiels and steel drums can produce a wide range of sounds. The glockenspiel covers three octaves using steel plate cut to different lengths for each note in the scale. Triangles, cymbals and bells make good use of the metallic sound of steel although they cannot individually form a melody.

The sound of Japanese wind bells can be defined in this way. Apart from the occasional typhoon, Japan experiences only light winds from early summer to the beginning of fall, so to many Japanese, the sound of wind bells elicits memories of cooling summer breezes. According to Japanese aesthetics, the refined, natural sounds of the wind are highly valued, so perhaps this is the reason wind bells sound so pleasant. Unfortunately, for Westerners staying at Japanese country inns, the bells may actually intrude on their peaceful enjoyment of a different Japan.

About the Author:
Tomoyuki Kohara is a science journalist who is interested in the materials of the life sciences, global environment, and ecosystems. He earned a master's degree from Hokkaido University in piscatology.

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At a June party in the garden, dozens of youngsters gently coaxed painted lady butterflies, folded inside wax paper envelopes, into taking flight.

look nice all year, and the woody plants will help in winter."

Painful as it may seem to some, various vegetables—notably that all-time favorite, cabbage—were included with the certain knowledge that they would be regularly destroyed by caterpillars. Gardeners will simply have to replace them as required.

At this point I thought it would be a good idea to ask Hardin to remind me of some of the things I'm sure I once knew about butterflies.

They start as an egg. You knew that. They are laid on a host leaf or under it, to become larvae, tiny worms, and to eat and molt, for two or three weeks, when they turn themselves into chrysalids, or pupate. Eventually they emerge as beautiful butterflies, unfolding their magnificent wings and flittering off to try out this delicious new adult diet that they suddenly crave, having never given it a thought in their former life.

There is a fine children's book on the subject, *The Very Hungry Caterpillar* (Philomel), by Eric Carle, who was the guest of honor at the June children's party. With the wave of a magic wand, the author and illustrator gave the signal to release the butterflies. Each child had been given a curious wax paper envelope. Inside, neatly folded wingtip to wingtip, was one of the garden's new inhabitants that had been raised from caterpillarhood in the Insect Zoo. Gently, the children coaxed them out of the envelopes into their hands, where more than a few youngsters had one or two precious moments to study the beauties before the butterflies took flight.

I took some time to meander along the garden, coming first to the wetland, representing salt marshes, peat bogs and other poorly drained areas as well as freshwater shorelines. The extreme moisture here discourages many plants, but grasses, trees and some wildflowers thrive in the spongy soil. The viceroy butterfly will stick around in this patch because it wants to be close to the black willow plants.

Next came the meadow strip, full in the sun, often dry for long periods and rich with wildflowers, providing all sorts of nectars for the adult insects. As visitors stroll by, they might envision a true country meadow humming with insects and bright with wildflowers and the flitting wings of butterflies. Here you are apt to see the delicate yellow sulfurs, noshing on red clover and vetch.

The wood's-edge habitat is shadier, with loose soil and decomposing leaves. It includes a transition area from sunny meadow to woodland shade. It is here that you will find the red admiral, with its concentric bands of red, blue, black and brown, no doubt eating the false nettles that it insists are better than chocolate, and some spotted varieties of butterflies that like dogwood, paper birch and other such delicacies. The reason you find spotted ones here, of course, is that the dappled shade helps them to hide from predators.

Finally, the urban garden features sunny areas and sheltering windscreens, both natural and man-made. This section is probably the most easily imitated by any local citizen who hopes to attract butterflies to the backyard, for all the plants here are just the sort of flowers common to the backyard garden or window box.

While I'm on the subject, here are some basic rules for the home butterfly gardener, as listed by E.J.M. Warren in her delightful *The Country Diary Book of Creating a Butterfly Garden*, a British work published here by Henry Holt: avoid pesticides and all poisonous chemicals. Plant in masses, using flowers of one color, rather than single plants in a variety of colors. Go for single blooms rather than double. And stick to the vivid flowers, not the paler ones. Butterflies have a great color sense, rare for insects, but the colors should be bright.

I think the Butterfly Garden is going to be one of Washington's favorite spots. It can't help but be beautiful. Everything about butterflies is beautiful. Even naming them seems to have slightly pixillated many a solemn lexicographer: *papillon* in French, *mariposa* in Spanish, *farfalla* in Italian, *Schmetterling* in German, *sommerfugl* in Danish . . . And in English, though the dictionary insists it comes from the Old English *buttor-fléoge*, most of us suspect that "butterfly" is just a whimsical way of saying "flutterby."

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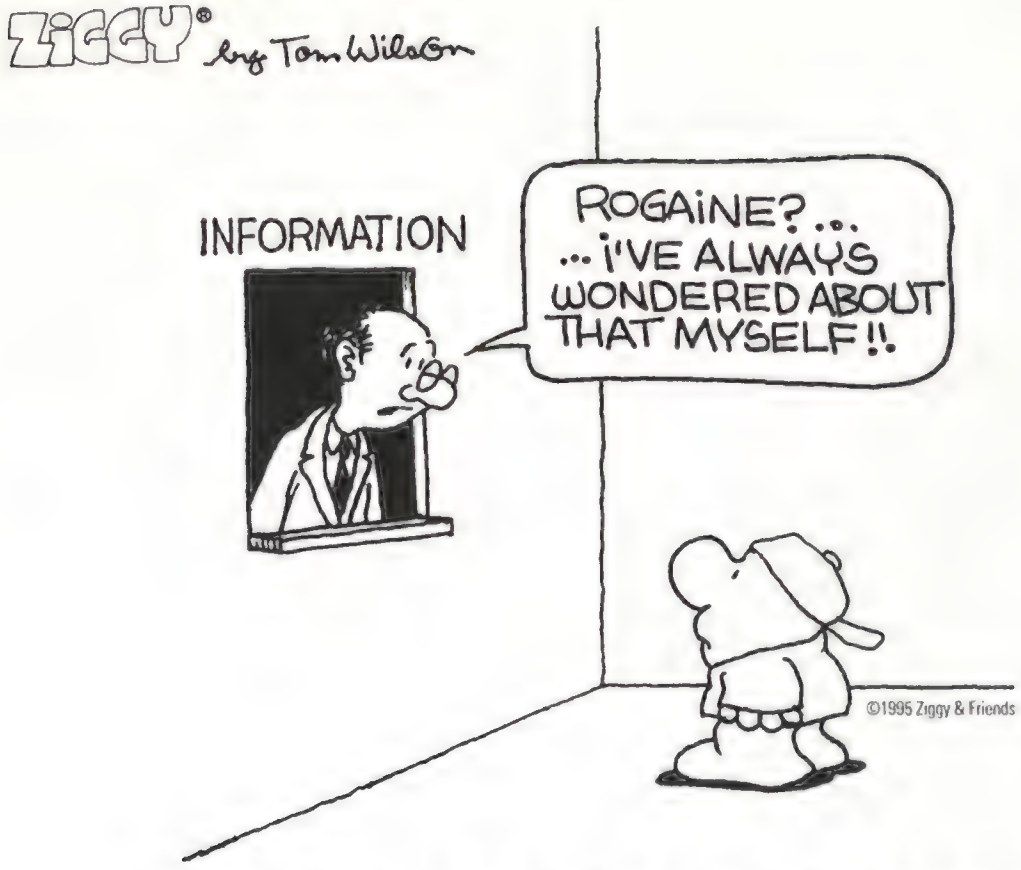

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What is ROGAINE?
ROGAINE Topical Solution is a prescription medicine for use on the scalp that is used to treat a type of hair loss in men and women known as androgenetic alopecia: hair loss of the scalp vertex (top or crown of the head) in men and diffuse hair loss or thinning of the front and top of the scalp in women. ROGAINE is a topical form of minoxidil, for use on the scalp.

How effective is ROGAINE?
In men: Clinical studies with ROGAINE of over 2,300 men with male pattern baldness involving the top (vertex) of the head were conducted by physicians in 27 US medical centers. Based on patient evaluations of regrowth at the end of 4 months, 26% of the patients using ROGAINE had moderate to dense hair regrowth compared with 11% who used a placebo treatment (no active ingredient). No regrowth was reported by 41% of those using ROGAINE and 58% of those using a placebo. By the end of 1 year, 48% of those who continued to use ROGAINE rated their hair growth as moderate or better.

In women: A clinical study of women with hair loss was conducted by doctors in 11 US medical centers. Based on patients' self-ratings of regrowth after 32 weeks, 59% of the women using ROGAINE rated their hair regrowth as moderate (19%) or minimal (40%). For comparison, 40% of the women using placebo (no active ingredient) rated their hair regrowth as moderate (7%) or minimal (33%). No regrowth was reported by 41% of the group using ROGAINE and 60% of the group using placebo.

How soon can I expect results from using ROGAINE?
Studies show that the response time to ROGAINE may differ greatly from one person to another. Some people using ROGAINE may see results faster than others; others may respond with a slower rate of hair regrowth. You should not expect visible regrowth in less than 4 months.

How long do I need to use ROGAINE?
ROGAINE is a hair-loss treatment, not a cure. If you have new hair growth, you will need to continue using ROGAINE to keep or increase hair regrowth. If you do not begin to show new hair growth with ROGAINE after a reasonable period of time (at least 4 months), your doctor may advise you to discontinue using ROGAINE.

What happens if I stop using ROGAINE? Will I keep the new hair?
Probably not. People have reported that new hair growth was shed after they stopped using ROGAINE.

How much ROGAINE should I use?
You should apply a 1-mL dose of ROGAINE twice a day to your clean dry scalp, once in the morning and once at night before bedtime. Wash your hands after use if your fingers are used to apply ROGAINE. ROGAINE must remain on the scalp for at least 4 hours to ensure penetration into the scalp. Do not wash your hair for at least 4 hours after applying it. If you wash your hair before applying ROGAINE, be sure your scalp and hair are dry when you apply it. *Please refer to the Instructions for Use* in the package.

What if I miss a dose or forget to use ROGAINE?
Do not try to make up for missed applications of ROGAINE. You should restart your twice-daily doses and return to your usual schedule.

What are the most common side effects reported in clinical studies with ROGAINE?
Itching and other skin irritations of the treated scalp area were the most common side effects directly linked to ROGAINE in clinical studies. About 7 of every 100 people who used ROGAINE (7%) had these complaints.

Other side effects, including light-headedness, dizziness, and headaches, were reported both by people using ROGAINE and by those using the placebo solution with no minoxidil. You should ask your doctor to discuss side effects of ROGAINE with you.

People who are extra sensitive or allergic to minoxidil, propylene glycol, or ethanol should not use ROGAINE.

ROGAINE Topical Solution contains alcohol, which could cause burning or irritation of the eyes or sensitive skin areas. If ROGAINE accidentally gets into these areas, rinse the area with large amounts of cool tap water. Contact your doctor if the irritation does not go away.

What are some of the side effects people have reported?
ROGAINE was used by 3,857 patients (347 females) in placebo-controlled clinical trials. Except for dermatologic events (involving the skin), no individual reaction or reactions grouped by body systems appeared to be more common in the minoxidil-treated patients than in placebo-treated patients.

Dermatologic: irritant or allergic contact dermatitis—7.36%; **Respiratory:** bronchitis, upper respiratory infection, sinusitis—7.16%; **Gastrointestinal:** diarrhea, nausea, vomiting—4.33%; **Neurologic:** headache, dizziness, faintness, light-headedness—3.42%; **Musculoskeletal:** fractures, back pain, tendinitis, aches and pains—2.59%; **Cardiovascular:** edema, chest pain, blood pressure increases/decreases, palpitations, pulse rate increases/decreases—1.53%; **Allergic:** nonspecific allergic reactions, hives, allergic rhinitis, facial swelling, and sensitivity—1.27%; **Metabolic-Nutritional:** edema, weight gain—1.24%; **Special Senses:** conjunctivitis, ear infections, vertigo—1.17%; **Genital Tract:** prostatitis, epididymitis, vaginitis, vulvitis, vaginal discharge/itching—0.91%; **Urinary Tract:** urinary tract infections, renal calculi, urethritis—0.93%; **Endocrine:** menstrual changes, breast symptoms—0.47%; **Psychiatric:** anxiety, depression, fatigue—0.36%; **Hematologic:** lymphadenopathy, thrombocytopenia, anemia—0.31%.

ROGAINE use has been monitored for up to 5 years, and there has been no change in incidence or severity of reported adverse reactions. Additional adverse events have been reported since marketing ROGAINE and include eczema; hypertrichosis (excessive hair growth); local erythema (redness); pruritus (itching); dry skin/scalp flaking; sexual dysfunction; visual disturbances, including decreased visual acuity (clarity); increase in hair loss; and alopecia (hair loss).

What are the possible side effects that could affect the heart and circulation when using ROGAINE?
Serious side effects have not been linked to ROGAINE in clinical studies. However, it is possible that they could occur if more than the recommended dose of ROGAINE were applied, because the active ingredient in ROGAINE is the same as that in minoxidil tablets. These effects appear to be dose related; that is, more effects are seen with higher doses.

Because very small amounts of minoxidil reach the blood when the recommended dose of ROGAINE is applied to the scalp, you should know about certain effects that may occur when the tablet form of minoxidil is used to treat high blood pressure. Minoxidil tablets lower blood pressure by relaxing the arteries, an effect called vasodilation. Vasodilation leads to fluid retention and faster heart rate. The following effects have occurred in some patients taking minoxidil tablets for high blood pressure:

Increased heart rate: some patients have reported that their resting heart rate increased by more than 20 beats per minute.
Salt and water retention: weight gain of more than 5 pounds in a short period of time or swelling of the face, hands, ankles, or stomach area.
Problems breathing: especially when lying down; a result of a buildup of body fluids or fluid around the heart.
Worsening or new attack of angina pectoris: brief, sudden chest pain.

When you apply ROGAINE to normal skin, very little minoxidil is absorbed. You probably will not have the possible effects caused by minoxidil tablets when you use ROGAINE. If, however, you experience any of the possible side effects listed above, stop using ROGAINE and consult your doctor. Any such effects would be most likely if ROGAINE was used on damaged or inflamed skin or in greater than recommended amounts.

In animal studies, minoxidil, in much larger amounts than would be absorbed from topical use (on skin) in people, has caused important heart-structure damage. This kind of damage has not been seen in humans given minoxidil tablets for high blood pressure at effective doses.

What factors may increase the risk of serious side effects with ROGAINE?
People with a known or suspected heart condition or a tendency for heart failure would be at particular risk if increased heart rate or fluid retention were to occur. People with these kinds of heart problems should discuss the possible risks of treatment with their doctor if they choose to use ROGAINE.

ROGAINE should be used only on the balding scalp. Using ROGAINE on other parts of the body may increase minoxidil absorption, which may increase the chances of having side effects. You should not use ROGAINE if your scalp is irritated or sunburned, and you should not use it if you are using other skin treatments on your scalp.

Can people with high blood pressure use ROGAINE?
Most people with high blood pressure, including those taking high blood pressure medicine, can use ROGAINE but should be monitored closely by their doctor. Patients taking a blood pressure medicine called guanethidine should not use ROGAINE.

Should any precautions be followed?
People who use ROGAINE should see their doctor 1 month after starting ROGAINE and at least every 6 months thereafter. Stop using ROGAINE if any of the following occur: salt and water retention, problems breathing, faster heart rate, or chest pains.

Do not use ROGAINE if you are using other drugs applied to the scalp such as corticosteroids, retinoids, petrolatum, or agents that might increase absorption through the skin. ROGAINE is for use on the scalp only. Each 1 mL of solution contains 20 mg minoxidil, and accidental ingestion could cause unwanted effects.

Are there special precautions for women?
Pregnant women and nursing mothers should not use ROGAINE. Also, its effects on women during labor and delivery are not known. Efficacy in postmenopausal women has not been studied. Studies show the use of ROGAINE will not affect menstrual cycle length, amount of flow, or duration of the menstrual period. Discontinue using ROGAINE and consult your doctor as soon as possible if your menstrual period does not occur at the expected time.

Can ROGAINE be used by children?
No, the safety and effectiveness of ROGAINE has not been tested in people under age 18.

Caution: Federal law prohibits dispensing without a prescription. You must see a doctor to receive a prescription.

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Smithsonian Highlights

Planning a Smithsonian Visit?

Receive a special free Associates' Planning Packet. Write Smithsonian Information, Smithsonian Institution, Washington, D.C. 20560, or call (202) 357-2700, daily, 9 A.M.- 4 P.M.; for callers with communication impairments, TTY: (202) 357-1729. *Note:* Parking near the museums is limited. The convenient Metrorail subway system has parking at some stations (details in packet).

Begin your visit at the Smithsonian Information Center's Associates' Reception Desk—open 9 A.M.- 4 P.M. daily—in the Castle.

Extended Summer Hours

The American History, Natural History and Air and Space museums are operating on extended hours daily, 10 A.M.- 6:30 P.M., through Labor Day, Monday, September 4. Hours at the National Zoo are 9 A.M.- 4:30 P.M. daily for buildings, and 8 A.M.- 8 P.M. for grounds, through September 15. Other Smithsonian museums are generally open 10 A.M.- 5:30 P.M. daily, except December 25.

Special August Exhibits, Events

Cooper-Hewitt, National Design Museum (New York)
Kitsch to Corbusier: Wallpaper from the 1950s (through August 20) Wallcoverings reflecting the postwar era. See *Highlights Continued*, page 20.
Gallery Closing The exhibition galleries of the museum will be closed to the public for renovation for one year, starting August 21. The project will integrate the museum's three buildings, create a design study center and improve access for the handicapped.

National Air and Space Museum
The Enola Gay (runs indefinitely) The exhibition features the forward fuselage of the *Enola Gay*, the B-29 that dropped the atomic bomb on Hiroshima. For information on free, same-day, timed passes, call (202) 786-2122.
Building the Arsenal of Democracy: World War II Photographs from the National Air and Space Museum Archives (through October 2) Images depict the supportive efforts of those on the home front.

National Museum of Natural History
The Royal Tombs of Sipan (through September 4) A significant archaeological find helps unlock the mysteries of Peru's Pre-Columbian Moche civilization.
Ocean Planet (through January 1, 1996) The causes and consequences of environmental threats to the world's oceans—computer animation, dioramas, videos, specimens, models.

National Zoological Park
Visitors can watch orangutans travel on the Zoo's new Orangutan Transit System: 400 feet of open cables 40 feet high.

National Museum of American History
Going Strong! Older Americans on the Job (August 1-October 29) Large-format black-and-white photographs of workers—from a Navajo shepherd to a Rocky Mountain typesetter.

National Postal Museum
Are We There Yet? Vacationing in America (runs indefinitely) Display of postcards offers a whimsical look at vacationing American-style.

Freer Gallery of Art
Whistler & Japan (through January 1, 1996) Exhibition of 31 paintings, drawings and prints executed by James McNeill Whistler during the 1860s-70s.

Arthur M. Sackler Gallery
Goyo: Japanese Prints (August 27-March 17, 1996) Color woodblock prints by Hashiguchi Goyo (1880-1921).

National Museum of African Art
The Ancient Nubian City of Kerma, 2500-1500 B.C. (runs indefinitely) Loan exhibit from the Museum of Fine Arts, Boston.
Ancient Nubia: Egypt's Rival in Africa (through September 4) More than 300 objects—ceramic vessels, jewelry, statuary and funerary inscriptions—from c. 3100 B.C. to A.D. 400.

Hirshhorn Museum & Sculpture Garden
Sean Scully: Twenty Years, 1976-1995 (through September 10) Touring retrospective showcases the rich abstract imagery of the Irish-born American artist.

Arts and Industries Building
Discovery Theater
Mr. Smith Goes to the Smithsonian (August 1-12) Live theater for young audiences. For information and reservations, call (202) 357-1500 (voice or TTY).

National Portrait Gallery
In Pursuit of the Butterfly: Portraits of James McNeill Whistler (through August 13) Paintings, sculpture, prints, drawings and photographs trace the evolution of Whistler's image as a popular icon in Victorian England.

National Museum of American Art
Secrets of the Dark Chamber: The Art of the American Daguerreotype (through October 29) More than 152 images.

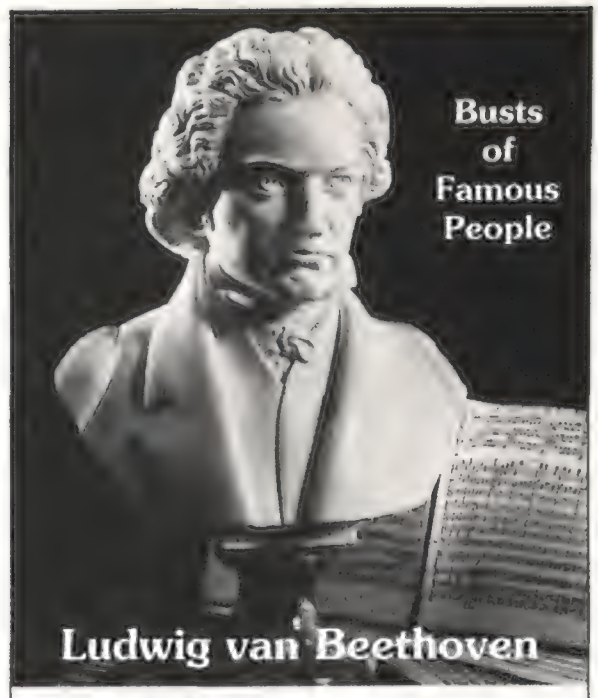
Renwick Gallery
Nancy Crow: Improvisational Quilts (August 25-January 1, 1996) The show follows the artist's experiments with traditional quilting patterns.

Anacostia Museum
Anacostia: Not the Same Old Story (through August 27) An exhibition researched by students of Lucy Ellen Moten Elementary, a D.C. public school, in a unique educational partnership with the museum.

Heye Center, National Museum of the American Indian (New York)
Creation's Journey: Masterworks of Native American Identity and Belief (runs indefinitely) The first of three inaugural exhibitions features 165 objects selected for rarity and historical significance.

Exhibition Catalogs

Catalogs available currently include:
Sean Scully ($25 paper)
Secrets of the Dark Chamber: The Art of the American Daguerreotype ($55/$35 paper)
Royal Tombs of Sipan ($45/$29.95 paper)
Ocean Planet ($39.95/$19.95 paper)
Creation's Journey: Native American Identity and Belief ($45/$29.95 paper)
To order, send check or money order to Smithsonian Museum Shops, P.O. Box 1140, Newington, Virginia 22122. Include 15 percent of purchase to cover postage, handling (minimum, $4.50).



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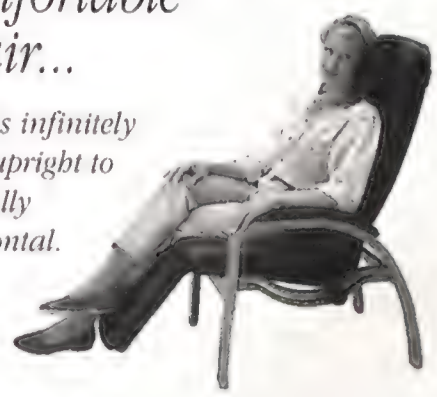
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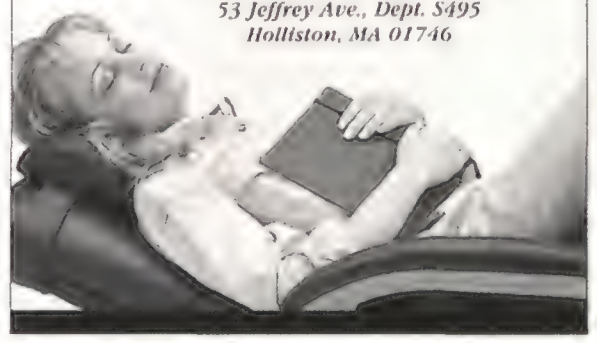


Highlights Continued

The lively art of 1950s wallpaper

Poodles in Paris, California villas, New Orleans jazz, covered wagons heading West, television transmission towers, Calder mobiles and Matisse cutouts: these diverse motifs all appear in "Kitsch to Corbusier: Wallpapers from the 1950s," on view through August 20 at the Smithsonian's Cooper-Hewitt, National Design Museum, in New York City. Organized by curator Joanne Warner, the show features an assortment of 100 wallcoverings produced between 1945 and 1959. The papers' exuberant colors, animated patterns and varied textures mirror the optimism that energized this country after World War II.

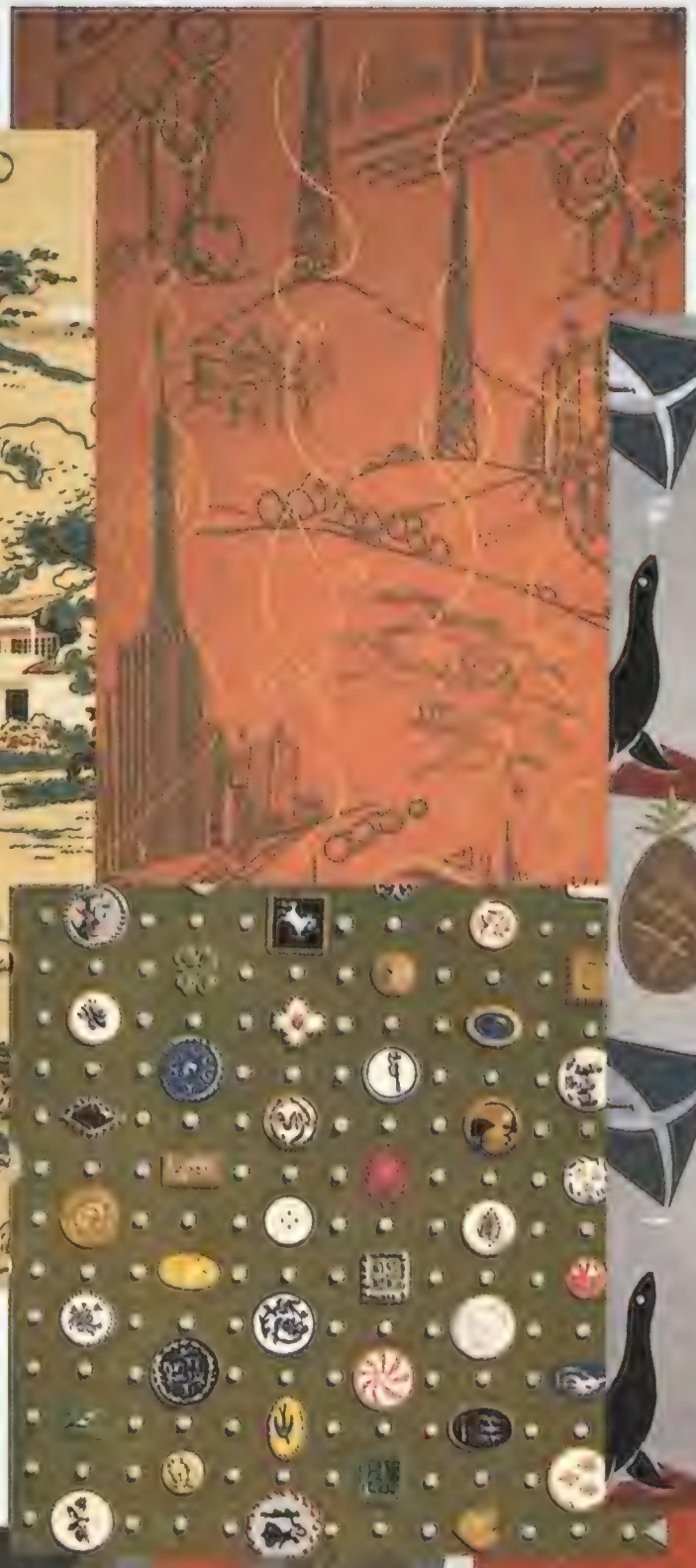
In an effort to create a "modern" look that would embody that spirit, wallpaper manufacturers encouraged designers, including renowned artists such as Miró, Matisse and Calder, to experiment. Embellished with popular imagery and modernist abstractions, the wallcoverings echo a postwar interest in modern art, European travel, teen culture and suburban living, and a fascination with technology and science.

"With a lack of inhibition that this country has not seen since, consumers hung 'hobby' paper in the 'rumpus' room, 'poodles' in the powder room and 'doodles' in the kitchen," says Warner. "Fifty years later, these designs and colors still seem modern and fresh."
Diane M. Bolz

Le Corbusier's "Mauer" wallpaper (above) is a bold grid of color. Playful shapes adorn Alexander Calder's mural (right).

"Arbre en Fleur" wallpaper mural (above) was designed by Henri Matisse in 1948. In 1953 cartoonist Saul Steinberg created a whimsical view of the Paris Opera (right) for Greeff Fabrics and Wallpapers .

California villas motif symbolized informal living popular in the 1950s.



Piazza Prints' "Buttons" pattern produced clever trompe l'oeil effect.

Mildred Coughlin McNutt's "Television" reflects the new medium's popularity.

Wallpaper with a cocktail theme was machine-manufactured around 1955.

Organic forms create lively montage in c. 1953 paper.

Machine-printed "Jazz 3" was created by Cuno Fischer for a German manufacturer.

"Happy Leaves" was designed by Vera and screen-printed by Schumacher in 1950.

By Russell Drumm

'Now lower your butts, Flangeheads, and haul away, haul away!'

Aboard the Coast Guard cutter Eagle, *cadets 'stomp together' and earn humility by working a ship the old-fashioned way*

Eagle's captain, Patrick Stillman, inspects the crew at quarters. Opposite: Cadets and an enlisted man finish taking in a sail some 150 feet above the ocean.

No one likes to be knocked down or caught aback, which is why Captain Patrick Stillman makes a practice of dousing *Eagle*'s top hamper, her royals, at sunset. They're doused unless the hour holds promise of a starry night and the lightest of winds from abaft the beam. The afternoon of May 19 most assuredly did not hold such promise. Just after *Eagle* left Montauk, New York, behind, a cold nor'east wind mounted toward 20 knots, and colder seas grew apace.

This wind is winter's last hurrah, a wind that the few fishermen who still depend on it know to be synchronous with the lilac's purple blooming. They once had a name for it, no doubt, like the mistral or the African sirocco. But for many of *Eagle*'s green cadets—whose three-masted home moved earlier this day from its berth on the Thames in Connecticut—this wind just plain "sucked."

19 May, 0600. "NOW!" came the omnipotent pipe, a harsh reminder of what time it really was: "Reveille, reveille, heave out, trice up, lash and stow, lash and stow."

0830. Crew and cadets mustered in *Eagle*'s waist. The captain addressed them; spoke of duty, of no compromise, of the value of personal integrity. Then a prayer.

"I am Mr. Curran!" barked *Eagle*'s executive officer to the quarterdeck watch. "I have the deck."

"Mr. Curran has the deck, aye!" the watch responded.

0900. "NOW! Sail stations, sail stations. On the fore, on the main, set uppers and lowers."

"Uppers and lowers, aye!" and the centuries-old litany of orders and repeated orders continued as the bark's topsails were ordered set in turn on the fore and main masts. All headsails and the main-topmast staysail were ordered in turn by Keith Raisch, *Eagle*'s veteran sailing master, the only sailing master left in the U.S. services today. "Ease starboard, haul port, handsomely port!" Mr. Raisch shouted, and *Eagle* gained headway and began her retreat in time.

21 May, 0830. Cadets of the U.S. Coast Guard Academy ascend the spiderweb of shrouds, their enlisted seamen mentors showing the way. Girls and boys of what one *Eagle* officer calls the "Nintendo Generation" lay out along the yards most gingerly, scared as never before. They shuffle along on the slack cables that loop below the yards. Sick, and swaying 50, 75, 130 feet above the deck and out over the sea, the cadets are too terrified to vomit. That comes once they're safely down, as they're helped by the enlisted crew into safety belts, as rules require, clipped fast to the waist railings where they kneel, throwing up to leeward and praying for shore, for a time machine to take them back to the future.

Photographs by Allan Weisbecker

Eagle beats to windward on the port tack. Running before a strong wind she can make up to 17 knots.

Eagle is one of the few time machines around. Her ride is not comfortable, is not meant to be. She will turn 58 on this cruise. A *Segelschulschiff* built at the Blohm & Voss shipyard in Hamburg in 1936, she was the 508th vessel built there. (The battleship *Bismarck* was the 509th). *Horst Wessel* she was called then, named for a Protestant minister's Nazi son, a man who lived with a prostitute in the Berlin slums and devoted his life to the rise of his hero, Adolf Hitler. Wessel was killed in 1930, during a street battle with Communists. History would have swallowed him had he not written the "Horst Wessel Lied," which became the anthem of the Nazi Party. Under terms of the Treaty of Versailles, German rearmament after WWI was restricted. One result: *Horst Wessel* was used illegally to train future mariners. The ship, whose decks were said to have once born the strut of the Führer himself, became the U.S.C.G.C. *Eagle* in 1946, a spoil of war.

Nevertheless, still intact is the dark mahogany panel-

ing of her flag cabin, the little room with an escritoire I've been given for this cruise. The words *Auf* and *Zu*, "open" and "closed," are still there in black lettering on the sink. She was sailed back to America after being found at war's end, abandoned and stripped of her running gear in bombed-out Bremerhaven. The U.S. Coast Guard, never without a wind-driven training ship, believes sail training to be the core experience for officers who, unlike many of their Navy counterparts, will use their ship and small-boat handling experience on a daily basis. Since 1946, more than 60 percent of Coast Guard officers have trained on *Eagle*.

Thousands of pounds of wind-filled Dacron

0930. Wind strengthening. *Eagle*'s yards are ordered braced sharp to accommodate a slight southing of the wind. "Ease starboard, haul port, lively port!" barks Chief Boatswain's Mate Rick Birch. "Heave!" shouts a line leader. "Ho!" replies her crew. Again and again the cadence is repeated. It takes the muscle of 20 young bodies, and the mechanical advantage of a few blocks, to haul around thousands of pounds of steel spar and wind-filled Dacron.

1005. The enlisted crew hangs on the starboard side forward, in an air castle formed by *Eagle*'s protective, shoulder-high bulwarks and the galley. An alley leads to stairs up to the foredeck, the enlisted crew's stamping ground. Cadets may hang in the waist. The quarterdeck and fantail are officer country.

The air castle is a place to smoke and bitch, but the bitching often is more like pride camouflaged. Pride at knowing how to do things the world has forgotten. Coast Guard enlisteds tend to look down on Navy "squids." They're saltier than squids. Better boat handlers. They help people rather than wage war. Popeye was a "Coastie" and he's painted on a compressed-air tank in "the hole," *Eagle*'s loud, hot and polished engine room. The crew sees the new cadets as unformed people, many of them spoiled, spoon-fed "flangeheads." But then, too, there's pride in teaching their future superiors. Still, some bemoan not being in the "real Coast Guard," drug busting, doing Haitian ops, buoy-tending in Alaska, or on ice patrol at the poles.

Erik Jordahl, seaman assigned to the foremast, is 24. He's been in the Coast Guard four months, two on *Eagle*. He's just been aloft, talking down third-class Tiffany Drumm, who was frozen high up on the upper tops'l yard. He'd told the officer-to-be not to look down, to concentrate on her hands.

"What's endearing about this job is four hours of sleep. Getting the crap beat out of you. Makes you feel alive." Jordahl studied jazz theory at the MacPhail Center for the Arts in Minneapolis. *Eagle*'s shrouds, he says, are all tuned to the same frequency—equal tension.

"The ship is like a huge stringed instrument. I'd like to bring my violin aboard, but the captain would make me play for his guests." He anticipates the ship's roll, offering a cigarette to Seaman Amy Miller as she steps off the lowest ratline on the foremast rigging, a dolphin tattoo leaping on her ankle. Angelic face, hard hands.

"Shoot," she says disgustedly of the weather, going on to tell, eyes lit, about having to string lifelines in the waist during a storm on the way back from Florida earlier in the year. The ship was rolling to 37 degrees.

It was Treasury Secretary Alexander Hamilton who urged in 1790 that "ten boats for the collection of revenue" be built. The American penchant for smuggling, which had served us well prior to the Revolution, was then hampering trade—"especially in coffee, which is an article easily run, from the nature of its packages being generally imported in small bags," stated a report to Hamilton. The Coast Guard was born.

The ultimate in sailing physics

1033. Now, *Eagle* is shouldering large seas, her sails sharp-set against a bruise of clouds. Her masts paint giant arcs as she rolls. Small, yellow shapes that are cadets and crew in rain gear high in the rigging streak across our own black sky. Her bowsprit, holding the feet of four triangular jibs, points skyward, then troughward. Large, cold swells lifting the 295-foot, 1,800-ton ship are sliced in the smooth, deliberate way in which only a sailing ship can slice them. According to the brass clinometer mounted on the pilot house, she is heeled to 18 degrees. Her beam is just 39 feet, with 9 feet of freeboard. Mr. Raisch says she represents the ultimate in sailing physics and technology, principles that had evolved in wood and hemp over centuries. Her high prow and sharp cutwater are an American idea perfected in steel by the Germans. Her steel stays, shrouds and yards can withstand tremendous forces of wind and sea. Mainmast and foremast each rise 150 feet off the water. Each carries five yards. From the yards are spread the square-shaped sails that give square-riggers their name and their speed when running before the wind.

"Now lower your butts, flangeheads, and haul away!" barks Boatswain's Mate Third Class Doug DeBoth, a thick man of Alsatian descent with years of drug enforcement sea duty. Soon the lines are secured on brass belaying pins along the entire length of the ship.

Eagle's standing rigging, the steel-cable stays and shrouds that hold the masts in place, is bolted into the steel ribs of the ship, thus spreading throughout the hull the horrific forces produced by 21,350 square feet of sail. When all are set in a blow, she produces the equivalent of 10,000 horsepower.

An unspoken competition exists between denizens of "the hole" (where "Max," *Eagle*'s dependable 1,000 hp engine, lives) and those sail handlers who man *Eagle*'s "sky works." "Deckies" prefer the heights and wind, but heat and noise are wind to the "snipes." There is less motion in *Eagle*'s netherworld, where machinery shines and hisses. And there is oil, its incomparable smell and feel, with boilers, gauges, compressors and "Joboo," a six-foot-square, brass-tubed evaporator water-maker.

Launched with Nazi fanfare in Germany in 1936, *Eagle* began as a training vessel for Hitler's growing navy.

It's the third day. Life has begun to be lived on the diagonal. The forces of gravity and weightlessness duel it out. The ship's enlisted crew can stand, walk, share a light moment despite the gnawing prospect of unbroken weeks of blue horizon and nothing but. Their blue ball caps, with EAGLE in gold letters, are rolled and squared just so. Undress blues are clean but stained in places by the Stockholm tar used in servicing *Eagle*'s hundreds of lines, ropes and shrouds.

From the deckies' belts hang hand-worked leather sheaths for knives and marlinespikes—so when they're aloft, their tools won't fall onto shipmates far below.

Learning the ropes of a great square-rigger

In following seas and bad weather, wave pressure on the rudder makes it harder for the cadets to steer.

Cadets handhold their way along the bowsprit in rough weather after hauling down one of the jibs.

Deckies' fingers have no nails; their hands seem to be holding lines even when they aren't, calluses and muscles having molded them to that purpose. Seaman's Apprentice Karen Ball, known as "Seawoman," keeps her hair short. But Seaman Angela Theis and S.A. Jennifer Livingstone do not, and from behind as they climb the rigging, they could both be young men of 200 years ago, jacks in Admiral Nelson's navy, wearing tarred and ribboned pigtails.

By now enlisted deckies have ceased to think about time—a protective response to life aboard a sailing ship. But the class of '97 cadets are still sick and confused and think of time—spent in the arms of a first love, or as a savior five weeks hence—as a refuge.

It is not. And as *Eagle* approaches today's Local Apparent Noon, with the sun at its zenith as determined by a sextant, she enters a time warp, sailing back via the precepts of celestial navigation and ancient tricks of wind and current. She will sail past the ephemeral comfort of yesterday, past Hitler, past Nelson, past Galileo, to a universe in which she again will be the center, a flat place over which all heavenly bodies parade. There, in midocean and in the absence of the polluting ground light of 10,000 malls, can be found a brilliant time to be feared in the biblical sense of amazement.

The smells of noon chow swirl about the deck, warming some, sickening others. "I'd rather be anywhere else but here," says a new cadet propped against the bulkhead of the mess and trying to eat dry cereal from a box.

In gale force winds *Eagle* can sometimes need four or more crewmen at once to man the wheels. With the ship heeled to port, cadets not yet too seasick to eat concentrate on keeping their trays from sliding.

1145. Captain Stillman hovers over the table in *Eagle*'s wardroom, the officer's mess. He is a short, Teddy Roosevelt of a man, a wrestler, full of bully teeth when he laughs, which is often, or when he makes a philosophical point, which also is often. The teeth can clench, however, beneath pale blue eyes and a world-class scowl when he's vexed, which is often today, it being the first day of sending green teenagers aloft and in stormy conditions. He is talking about *Eagle*'s purpose, and what he calls the Coast Guard's "gross" identity crises. It is clear he sees the ship as the embodiment of the Guard's traditional values, but also its problems. The scuttlebutt has it that the incoming Commandant is to preside over the Coast Guard's predetermined atrophy.

Eagle is eventually to proceed up the Potomac to serve as backdrop for the Change Of Command ceremony. Then off to the Azores, and Plymouth, England, the Cape Canaveral of wind-driven ships. The future of the ship, her very course on this trip, is a constant source of often-lively conjecture on all decks. It's discussed openly and in whispers in a way that says *Eagle*'s heading and handling on any given day does or does not validate her past, assure her future. Not by the cadets; they're still vague as to why they're at "the summer camp from hell," though they seem of one voice about how it was the promise of everyday, "peacetime missions"that made them choose the Coast Guard—"*Semper Paratus*"—over the Army or the Navy.

Captain Stillman *is* the *Eagle*, of course; the tradition of piping him on and off—"*Eagle* arriving," "*Eagle* departing"—is intact. And, for Stillman, the Coast Guard is as he is: small, scrappy, able to prevail via a morally superior sense of mission and duty. The major deterrent and his greatest challenge as a leader, he says, is society's genius for the petrifying of ideas and responsibilities, putting the blame on others. He will go on about it: "It's always 'the system' that's wrong. Well, we *are* the system and we must reinvent it. De Toqueville was right: individualism will kill us unless we're willing to serve the community; otherwise, we'll drown in the solitude of our own hearts."

Fellow officers, expert at reading the captain's moods and, like all career military, practiced in the subtle, nonconfrontational and often humorous style of disagreeing with the points of superiors, eat hamburgers and drink iced tea, casually catching plates, glasses and bowls as they go, weightless on our rollicking tack.

Lieut. Cathy Tobias, *Eagle*'s very capable operations officer, asks for the peas. She's a Trekkie and bemoans missing the final installment of *Star Trek: The Next Generation*, but says her husband has taped it.

"I fell in love with Nelson at an early age," Stillman is saying as a first-class cadet approaches, excuses himself for interrupting and haltingly recites:

An ex-commercial fisherman and longtime journalist, Russell Drumm writes frequently about things nautical. This is his first article for SMITHSONIAN.

"Good morning, Captain. The officer of the deck sends his regards and announces the approach of noon. Request permission to strike eight bells on time and test the ship's alarms and whistles."

"Make it so," the captain replies, going on to tell, not eating—he eats one full meal a day—how his master's thesis at Wesleyan was "leadership during the great age of sail," tales of Nelson and Collingswood, Nelson's gifted right-hand man. He's at a loss to explain what attracted a boy from Rocky River, Ohio, to it. Later he earned a master's in public administration from George Washington University. He commanded the 270-foot cutter *Forward* in deep Caribbean drug ops, and in the Windward Pass, collecting Haitian boat people.

Topside. Just forward of *Eagle*'s fantail, Lieut. Mindy McGuer is on the bridge.

Women, says the captain nodding toward McGuer, are key to the Coast Guard's modern mission. Because there is no restriction on opportunities for women, they are assimilated quickly. "From my perspective, there is a positive balance from a mixed crew. Freud was way off base. Jung had it right: the authoritarian versus the communitarian voice. The female voice is the glue that holds the whole thing together. Ironically, look at Nelson, more female than authoritarian. His people loved him, because he loved them.

"Here, people give up their human urges that would ordinarily be unbridled, for the good of the ship."

He means that without liaisons, there are no lovers to abandon emergency protocols for, forsaking all others. I am to learn, of course, about a few affairs, jealousies. There is the ribald humor in *Eagle Droppings*, the crew's underground newspaper. And there is the reinvented puritanism of *Eagle*'s Human Relations Council, its weekly fine-tuning of fraternization rules, its healthy awareness of the seductive pull of cozy nooks like the boatswain's hole and the paint locker.

The captain goes on about *Eagle*'s unique ability to humble. "The military professional should be driven by a profound sense of humility, rather than a profound sense of pride." A number of cadets grow humbler by the minute, lying in fetal position in the waist, so sick they'd sooner be keelhauled if it would lift the pall.

"On deck there!" shouts a seaman from high on the mainmast. "Ease the t'gallant buntline." There are more than 200 lines feeding into the pin and fife rails, of which cadets, sick or not, will learn the names, locations and uses. A big green swell lifts *Eagle*, and she dips deep to port. With the roll, cadets and seaman aloft on the upper topsail yard repeat their metronomic arc back and forth across the gray sky.

Sailing Master Mr. Raisch mutters something blasphemous about the trip up the Potomac. It is allowed to drop. Keith Raisch is not an Academy man. He has been in the Coast Guard for over 20 years, with *Eagle* for 8,

Cadets and enlisted men haul away together on a halyard, practicing teamwork needed to work the ship.

longer than any other person. He seems to be under a cloud. During the noon meal he insists that the cadet wardroom attendant find his linen napkin and brass napkin ring. The table has been set with paper napkins since we left New London, part of a new austerity that is not only a break in tradition but unnecessary, he tells his messmates. The subject is not pursued.

On the quarterdeck after lunch, he tells of his orders to leave *Eagle* soon. He has been reassigned to a buoy tender in Alaska. He needed to get away, he says, but is torn. As sailing master he had wanted to take *Eagle*, with help from square-rigger veteran Karl Dillman, back to the way she was rigged in the 1930s. Neatening a coil on the starboard pinrail, Raisch curses the intrusion of what he calls "the beach," a kind of philosophical shoaling that has taken place: air-conditioning, closed-circuit TV for movies in every lounge and mess, racks instead of hammocks.

"Stomp together!" snaps a boatswain's mate, encouraging cadets to haul on a sheet without falling asleep in the process. The wind is up to 20-plus knots now. In the waist, cadets are sick on the leeward rail. The captain as-

Raising and trimming *Eagle*'s 21,350 square feet of sail requires considerable muscle and discipline.

sures the pale helmsmen that Nelson was seasick his entire career.

"The configuration of this ship is the height of technical achievement," Raisch continues. "The shrouds are a given because they support the masts, so we can only brace the yards around six or seven points to the wind, each point being what?"

"Eleven and a quarter degrees, sir."

The alien wisdom pours out to the 19-year-olds driving this 58-year-old girl. Her lovely ways are revealed more intimately in the soreness of their necks from looking aloft, legs from bracing against her heel, arms from holding her just right at the wheel.

1900. Same gray, seasick day. The weather briefing is held in the crew's mess 'tween decks, just beyond where cadets sleep stacked like cordwood. Computer terminals list to starboard. The storms are moving northeast.

2100. The ocean tears past, a rapids just beyond a half-inch of steel. I'm in my rack, rolling out of it. The wisdom of hammocks on a sailing ship is obvious from here; their replacement in the '70s seems another stretch of Mr. Raisch's "beach." But *Eagle* is no "Love Boat." Her interior is spare, threadbare for lack of funds. Her annual budget is only about $300,000.

In my quarters, the ghost of Horst Wessel presents a familiar but still troubling irony: how, for many, the lasting examples of Germany's genius for precision and efficiency forever remain coupled with the potential for well-oiled evil. The captain thinks that awareness of this is important. The crew knows that etched in the circle of brass on the first of *Eagle*'s three wheels are the words *Segelschulschiff Horst Wessel,* but the words are hidden by a strip bearing "U.S.C.G.C. Eagle."

Monday, 23 May, 1030. "NOW! Quarters." 120 miles east of Cape Bell, cold and gray. Wind, northeast at 12 knots; seas, 6 feet; course, southeast. Cadets continue their routine, a week as a deckie, a week in the hole with Max, the boilers and Joboo. Then a week as an "ops puke," learning a quartermaster's duties, then in damage control, and in "support"—meaning the scullery.

1130. Lunch with the captain: Salisbury steak, limas, iced tea. The mess attendants have set Mr. Raisch's place with his red linen napkin and brass ring.

1320. Eagle is still making 10 knots under all plain sail. Captain and executive officer meet with first-class cadets in the wardroom. "There's no bravado in this business," the captain tells them. "It's risky business because of the Clausewitzian Fog." They laugh. They've heard this before. Karl von Clausewitz, the Prussian military strategist, is a favorite of the captain's. Captain Stillman tells cadets that Clausewitz was an early exponent of chaos theory, that random events are no less influential in war than the most rational calculations.

Lieut. Comdr. Keith Curran, *Eagle*'s executive officer, speaks. He tells the firsties, one of whom is nodding from fatigue, that when they're on watch and feel they must wake the captain, make sure he's awake and understands. The captain adds that as a young man, he thought that he needed to understand the total situation before troubling the captain—"have my socks suitcased and stenciled, metaphorically speaking."

"Suitcased and stenciled, aye, sir," repeats Mr. Curran, chuckling, Stillman's unflagging straight man. They have a way of trading statures, becoming one authority. Mr. Curran advises the cadets not to depend on radar. "Don't get cozy in the pilot house. Get out there and feel the wind."

Midwatch, 0000 to 0400. "Mid-rats" are served to the crew.

The ship is a conglomerate of ages. She displays faults of time at every level—a bit Jurassic in the hole by virtue of the fossil fuel consumed there. "I cremate old dinosaurs," engineering officer Bob Volpe confesses with pride. He carries his earplugs in a transparent plastic capsule chained to his belt. The next stratum down is human salt, male and now female berthing areas. Bodies, stacked in bunks, are mended there by dreams woven on the ocean's loom, same as always.

"Frozen" on the topsail yard, a first-time-aloft cadet awaits help; later she went up again and was OK.

Tonight, on the weather deck, Lieut. Eric Jones raises his sextant to shoot Arcturus in order to compute latitude Captain Bligh-style. He is *Eagle*'s ace celestial navigator, a mathematician who uses his knowledge of fluid dynamics to trim *Eagle*'s sails. Beside him within the housing known as CIC (Combat Information Center), where the eerie green retinas of *Eagle*'s electronic eyes glow, a digital receiver fixes the ship's position to within a few feet. In Jones' hip pocket is his portable global positioning system receiver. Still, he chooses to move Arcturus from the dome of the celestial sphere to the horizon by hand. It's only on the upper yards, on the "fighting" tops from which the ghosts of royal marines fire onto enemy decks, and even higher, on little platforms surrounded by canvas and sculpted air, that the past is victorious, unassailable.

24 May, 0935. Rumor is there's a storm off Hatteras, and we're going to go up a river to hide. Maybe, maybe not. Rumors grow on a ship like Jack's beans. Following orders, then dissecting them later in the crew lounge, is sport. We're 60 miles off Cape Charles, approaching Chesapeake Light.

1300. Rock music in the galley and laughter among cadets for the first time, perhaps because land is visible. Levity is short-lived. Dillman forms them up on the fo'c'sle deck. "Prepare to wear ship." Orders from the bridge: "On the fore, on the main, wear-oh!" *Eagle* wears—jibes, that is, coming about the long way round, as square-riggers must in strong winds to avoid being caught aback. As the crew hauls, and commands whistle in the air, a gray, nuclear-powered missile cruiser slips punctiliously past in the opposite direction. Later in the day, Captain Stillman wears ship again and heads offshore to play in the Gulf Stream.

Wednesday, 25 May, 0800. The sea is Gulf Stream blue, like ink. The wind brings welcome heat aboard at 25 knots. The sun is a silver dollar appearing and disappearing behind gray clouds like a magician's trick.

"Yeeeeeeooooh!" Jason Byng Osborne, a deckie from Anderson, South Carolina, gives the rebel yell as *Eagle* cuts through a six-foot sea, sending spray up through her hawse hole onto the fo'c'sle deck. Ozzie's on bow watch with his lower lip full of dipping snuff and an anchor tattoo on his forearm. Says they grow soybeans and cattle around Anderson.

"Grandpa was a farmer, now Dad works for Southern Bell. We're country people but can't farm no more. I joined in November of '93. Didn't even know about *Eagle*. They said I was goin' on an old ship. I didn't know it was going to be this great. In Florida I was on the t'gallant yard and girls came by in g-strings. I was yellin, 'Yeeeehahhh!' XO said, 'Tell that guy to shut up.'"

0900. We're 100 miles northeast of Hatteras. The sea is tinfoil and gunmetal, with white horses riding as far as the eye can see. Wave crests break into bright turquoise footprints from topped waves. The wind is gusting to 35 knots. A cadet suddenly exits the Combat Information Center and vomits pancakes, bacon, eggs and orange juice over the lee railing. The ship's power is overwhelming. Sea smells mix with Lieut. Tobias' perfume. She's a health freak and will lead spirited aerobic exercises in the waist whenever conditions allow.

Later, at dinner, Tobias talks *Star Trek* with the officers. Captain Stillman says the late Gene Roddenberry, the creator of *Star Trek*, used the Coast Guard as a model for the Starship *Enterprise*'s missions. His ashes went aloft in the space shuttle.

"Douse the Dumbo, reef the Goofy"

Over dessert of ice cream and weightless dishes, there is a sardonic discussion of *Eagle*'s impending trip up the Potomac to be a "backdrop" for the Coast Guard's change of command. The idea of *Eagle* as a public relations strumpet is clearly off-putting to some officers. They joke about going all the way, commercializing her totally, letting companies sponsor sails—Disney, for instance, and the commands would go something like, "reef the Goofy" (laughter), "douse the Dumbo" (more laughter). Mr. Raisch does not seem amused.

26 May. Wind, 8 knots. In the distance, fighter jets do touch-and-go landings on a carrier. Every few minutes whales, grazing lazily around *Eagle*, rise with deep, comforting exhalations.

Cadet Ty Nagie, who comes from Pittsburgh, says, "My main interest is drug ops, boardings, police aspects. My reasons are personal; a few friends caught, one that's

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Young salts grouse about the hardships of life aboard but some yield to the temptation of an *Eagle* tattoo.

dead. Look at those jets—what they are doing is impressive, but not humanistic."

"Captain on deck!" barks the deck officer. The watch salutes, a whale breathes. The sea grows lavender in the waning light. "What we refer to as romance," says the captain, "it's not the ships themselves, but the discipline, sacrifice. A ship is nothing without her people."

30 May, Memorial Day. From the time *Eagle*'s sails were ordered doused and the engines started, entering the Chesapeake, the deck watch has been chipping, painting and polishing.

Going up the Potomac, the crew is to perform the dangerous task of housing, or lowering, the topmasts in order for us to fit beneath the Harry W. Nice Bridge. The last seaman to be killed on *Eagle* was crushed beneath the main-topmast shrouds and royal yard when a fastening slipped. The crew knows the story. In a somber mood, they lay aloft at 1930 with their "brain buckets" (hard hats) and bags of tools.

At quarters, and also in a somber mood, Captain Stillman asks the crew to reflect on "the experiment we call America," and the sacrifices that have been made in its name. Especially, he adds, on the eve of the anniversary of D-Day, the greatest maritime enterprise in the history of the world. "In the first 36 hours, the Coast Guard pulled 1,436 lives out of the water," he says. Many lost their lives doing it.

The captain has begun to stab the air, his voice rising. There is a bet in the waist as to whether he will again use the phrase "ponder the imponderable."

Part of the topmast crew, roused for watch, complains, "Six days a week, 13 hours a day." The crew continues to gussy the ship to receive VIPs for luncheon.

1330. "Form the chairs in a crescent shape."

"Crescent shape, aye, sir." The ice sculpture of a swan is in place. The enlisted crew has been ordered to stay forward. There is some grumbling about how those who do the work are not to be seen. A deckie says the swan always comes out looking like a pelican. The captain whispers that when he gets to Washington he's going to disappear and get himself a goblet of martinis and sip it slowly. Over the side the VIPs come. Manfully the captain wades in among them, fearless, administering withering eye contact. A second wave comes aboard. "A privilege to share *Eagle* with you—" the captain's voice just audible over the chatter—"brings people together"—and so on.

The Potomac has narrowed, gotten shoal, and turned algae green. Bugs have found us. Pipe to attention, one blast descending. The cadets in dress tropical blues move to the rail to render honors to Mount Vernon. "The Star Spangled Banner" is played.

31 May, 1200. The crew hauls the braces round for entry into Washington. Sails are furled harbor-tight, all the lumps (called "deadmen") flattened out.

1315. The Washington Monument is just ahead. *Eagle* draws 17 feet. Her depth-finder reports: "Three feet under the keel, sir." "Three feet, aye." The deck watch is wagering whether or not *Eagle* will hit bottom before she makes her berth. She does. Just 100 feet from her berth, within sight of the Jefferson Memorial. Brick and white-columned condos rise to starboard. Jets scream overhead. *Eagle* is aground.

Wednesday, 1 June. Twenty-four hours later, we are standing out to sea. The deed is done. The Coast Guard has a new admiral in command. During the ceremony three cadets nearly passed out in the rigging.

Four days of plodding by engine power. The ocean is glassy, purple.

Sunday, 5 June. Catholic services under way on the fantail, Protestant on the boat deck, rock'n'roll on the fo'c'sle deck. The captain has ordered a change of course, northward, gambling for wind. The sailing master appears on deck; he had made himself invisible since D.C.

1000. The captain climbs to the bridge. "Engine stop—put the royals in the gear." Then, set to the royals, *Eagle* becomes something else entirely, flying free at last from the cocoon of a stale marriage with land, her canvas wings white against the blue of day, black against explosions of stars at night.

Thursday, 9 June. Thirteen hundred miles from the Azores. *Eagle* approaches her maximum speed—17 knots. Under the huge press of sail, her bows peel off tons of water with a roar. Lee scuppers gush seawater. Even high aloft on the mainmast crosstrees, the sibilant sounds of her passing rise to the ear.

On a calm day with no sails to set, a cadet takes in the beauty of a sunset from the foremast royal yard.

Designing your own set of wheels

Sporting faux fur to gold to the front lawn, old clunkers are getting decked out as art cars—the ultimate vehicles of self-expression

If you're looking to revive an aging automobile, Gene Pool recommends grass, preferably Manhattan perennial rye #2. "It's the best grass for cars," he says. It grows quickly, sprouts in about three days and reaches full height, as seen below, in, oh—two weeks, tops. But prepare yourself for the offers you might get from well-intentioned strangers. "I'll go home and get my lawn mower" is a scary proposition after days of planting and watering and making grass grow on steel.

Of course, Gene's wheels could be a bit too earthy for some tastes. Many folks require more richly ornamented, drastically overhauled, highfalutin cruisers than his. These wacky creations, known as art cars, come plastered from hubcap to rooftop with beads or buttons, or cleverly converted to look like—what? A bubble bath on wheels? A hearse for hippies? An armadillo? (No, it's a *Carmadillo,* naturally.)

Don't be discouraged if no artmobiles have driven through your neighborhood yet. The 300 or so on America's roads are showing up at festivals in a growing number of cities, including St. Louis, Atlanta and Houston, which hosts Roadside Attractions: The Artists Parade. This event, the largest annual gathering of art cars in the world, features a ball, a symposium, a parade and a competition. The *Carmadillo,* one of 240 entries this year, won top honors.

But, you may ask, what makes them do it? Armor Keller, proud owner of a transfigured Toyota, puts it best. "All my friends were getting face-lifts," she confides; "I decided to do something different."

Lucinda Moore

Musicians Gene Pool and Sasha Sumner stay close to nature in their *Live Grass Car* and matching ensembles, made by applying seeds to adhesives, watering and covering. The grass can last two weeks after maturing.

Art student Dot Comma (above, supervising her friend's bath) got the idea for *Squeaky Clean, The Sud Machine* while washing dishes and brainstorming with codesigner Poppy Luce. They put a kid's swimming pool in the back of a '68 Plymouth, sprayed foam insulation for suds and stocked the tub with some rubber duckies.

Floridians Todd Ramquist and his partner Kiaralinda, whose motto "Play Now, Rest Later" appears on their *Universe Hearse*, invite others to engrave messages on the '73 Cadillac body, even including one marriage proposal. Perched on top, Angel—a resurrected store mannequin—presides over 30,000 pieces of glued-on Plexiglas.

Photographs by Tom Ives

Birmingham, Alabama, artist Armor Keller, leaning on hood, describes *Magic City Golden Transit* as a great way to bring art to the public. She covered her 1980 Toyota in gold leaf, crowning the whole thing with a golden rider, Midas Mama.

Sculptor Mark Bradford used a pickup truck to motorize his 50-foot-long aluminum-plated *Carmadillo* and a van frame to support it. Iron arches help shape the animal. At Houston's art car parade, he won Peoples' and Judges' Choice awards.

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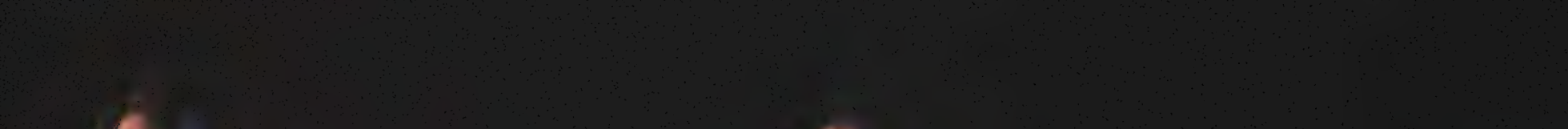

By Steve Kemper

If it's 'impossible,' Michael Moschen will do it anyway

He accomplishes feats other jugglers would never even dream of, which is why this remarkable innovator is in a class by himself

When Michael Moschen moved to Cornwall Bridge, Connecticut, in 1992, he caused some mild consternation among the town's tasteful Yankees and New York weekenders. It's an area of rural gentility marked by red barns, stone walls and big white farmhouses. Moschen's small Cape, by contrast, pulses with vivid colors, but the house is subdued compared with the yard.

The trees near the road are adorned with rows of multihued S-shaped screens that spiral and dance in the wind. A huge white orb hunkers in the middle of the lawn. A pile of miscellaneous barrel hoops, painted purple, looks insouciant alongside an old stone fence. Other piles look like most people's idea of junk. In fact, much of the stuff in them comes from one of Moschen's favorite places, the town dump. The pile near the driveway consists of an old, upturned wheelbarrow, big industrial springs and hooks, and a rusty wooden-spoked wheel. On some days a passing neighbor might see a twirling contraption that, on closer inspection, turns out to be eight conical frames normally used to hold up

In motion, Moschen levitates three illuminated balls for the photographer's multiple exposure.

tomato plants, but here revolving on a large turntable, their wires brightly painted.

The man responsible for all this is one of the most innovative jugglers in history, and the only one ever to receive a MacArthur "genius" grant. Michael Moschen has stretched the meaning of the word "juggler" far beyond the usual image of cascading balls and plates on sticks. Even colleagues and critics aren't sure how to describe him: "illusionist," "movement artist," "animator of objects" and "dancer-physicist" are a few of their attempts.

Moschen pays a price for escaping categories. He has performed off Broadway; at Lincoln Center; in a 1991 PBS special for *Great Performances*, "In Motion with Michael Moschen"; in movies (*Hair, Annie* and as David Bowie's hands in *Labyrinth*); and on every continent except Africa and Antarctica. Yet his recent tour, though it sold out every show, was limited to just 13 cities because most producers and booking agents still haven't figured out how to sell him.

Most jugglers learn tricks from the outside in. They study other jugglers, pick apart the techniques, then copy them and add their own fillips. Moschen works from the inside out. He surrounds himself with shapes, colors and everyday things, steeps himself in them, tinkers with them, makes photographic studies of them and watches how they move in the wind. Occasionally he picks up a shape to see how it feels in his hands. Instead of immediately trying to impose his will on objects, he tries to discover what *they* want to do. When an object finally does speak to Moschen, he groans, because he can foresee years of exploration, practice and clumsy failure before anything approaching magic emerges.

"When you get down to it psychoanalytically, jugglers are about control," he says. "Most jugglers want to hang on to an order that's already out there. But when I start a new piece I want chaos, and then I want chaos to give up a *new* order."

Moschen also differs from other great jugglers in his emphasis. Though he performs a couple of bravura speed pieces, his main impulse is to slow down and sim-

Photographs by Wayne Sorce

plify. Instead of mastering ten balls, like the great Enrico Rastelli, he masters one. Instead of spinning and flipping balls with dazzling acrobatic speed, like his friend and early hero Francis Brunn, Moschen changes the pace to a slow dance, caressing a single hoop as if it's the last circle in the world.

His two-hour show, during which he never speaks, combines mystery, comedy, amazing physical feats and expressive movement to the music of the New Age composer David Van Tieghem. The curtain opens with Moschen kneeling in a pool of light, completely absorbed by the four crystal balls spinning within each of his open hands. He releases one ball at a time until two remain in each hand. The balls "chase" one another around his chest and over his head. Then he releases each of them until only one is left.

Now he appears to float the remaining ball across the stage on top of his hands, as if he's nudging a soap bubble. It glides up over his fingertips and into his palm, runs back up one arm, across his chest and down the other arm. He peers at it, and it leaps onto his forehead. He sinks to the floor, puts his hands behind his head and casually crosses his feet, the ball still perched on his forehead. He looks like a man about to daydream beneath his personal moon.

It is one of Moschen's signature pieces and it is lovely beyond words. Like most of his work, it stems from a specific emotional experience. He was working with three crystal balls one day while he was watching his wife, Danielle, nurse their daughter, Isabella, who is now 6. "Instead of the balls all going in one direction, one suddenly went *over* the other two," he recalls. "I immediately thought that that's what a child does to a relationship. It weaves over and around and through it, always touching it and adding another dimension of beauty and depth. It was a truthful image, and I knew it would take me months and years to explore it."

Jugglers are astounded by the piece's technical difficulties. Though Moschen makes the balls look buoyant, they actually weigh one and a half pounds each and have a diameter of three inches. To keep them roiling within a palm requires great hand strength. It took Moschen three years to develop the technique with three balls. It's typical of him that he then added a fourth.

"I remember when he was developing a move with the crystal ball where it's caged in his hands, and then it moves up and over the top," says John Kahn, Moschen's longtime friend and collaborator, who built most of the sculptural shapes in the show. "It only lasts a few seconds. He worked on it for a year and a half. I kept saying, 'Michael, forget it. It can't be done.' And even after you see him do it, if you isolate that move in slow motion, you say, 'That's just not possible.' He's an inspiration who proves that *anything* is possible."

"Physics imposes rules, like an umpire," Moschen says. "I need to find those rules and find what the game is, and then learn the skills to play it. I've had plenty of fights with the umpire and been thrown out of a few games." He pauses. "What I really like about juggling is that every moment is determined, every moment can be so interesting—every moment can be *enough*."

Before Moschen, jugglers used their hands to control objects by grabbing them. Moschen invented the technique of controlling objects with open hands, which creates the illusion that the objects are following their own impulses. And though other jugglers had rolled objects instead of tossing them, Moschen brings unparalleled finesse and imagination to the technique.

His best-known piece begins with Moschen on his back. As he breathes, a white ball on his stomach rises and falls, then rolls down and sticks under his chin. He sits up with his legs spread wide and, like a child, begins rolling the ball around on the floor. Then he adds another ball, and a third. The rolling gets more complicated, the kid gets more confident. The music changes from a lullaby to a funky beat, and suddenly Moschen is on his feet, all grown up, juggling three balls and wearing the sly, triumphant grin of the street performer he once was.

A curtain rises upstage, revealing a triangular structure made of wood. It sits there like a tent (p. 47), and it's big enough, at ten feet on a side, to accommodate a person. The street performer notices it and thumps a ball against it, shrugs and resumes juggling. But something draws him back, and soon he is standing inside the triangle, ricocheting a ball off the sides. The percussive sound pleases him, so he adds another ball, catching and rethrowing them in complicated rhythmic patterns

Steve Kemper juggles writing assignments, two young sons and a mortgage in Connecticut. He last wrote for SMITHSONIAN *on Canada geese (January 1995).*

Rapid-fire flash shows how Moschen keeps four balls in play as they ricochet off disks and return to him.

In finale of his performance, Moschen swings (rather than juggles) two torches to spin a "web" of flames.

With laser-like concentration, the artist rehearses his crystal-ball act. It took him three years to perfect.

In earlier incarnations, Moschen teamed up in zany juggling acts with "bowler" Bob Berky (on top, above) and clownish Penn Jillette (holding umbrella at left).

that delight the eye and ear. He decides to tap his feet while keeping the balls going, then begins bouncing one ball *with* his feet while continuing to bounce the other two with his hands. Still not content, he starts doing a soft-shoe routine in between the foot bounces. Finally he emerges from the triangle and begins slinging all three balls against the inner surfaces in a breakneck, pounding rhythm. The balls rebound so rapidly they appear to leave tracer trails, and Moschen looks enmeshed in caroming geometry.

This piece thrills because it seems physically impossible. It almost is. On most nights Moschen has to make a number of "saves" to keep it going. "I know if I've made a good throw, and if not, I adjust," he says. "I get so involved out there that I have to remind myself to blink, or my eyes dry out."

He has been working on the piece for eight years and constantly devises ways to take it deeper into impossibility. "It's still only halfway there," he says.

Moschen has learned to follow his instincts. At a tag sale a few years ago, he bought a box of linoleum floor tiles for reasons that eluded him. They sat on his porch for months. One winter day he put them in a tub of hot water. When they were pliable, he bent diagonal corners in opposite directions to form S-shapes, then put them back on the porch to freeze that way. He loved the shape. Knowing what he was in for, he groaned.

About that time, Montreal's Cirque du Soleil asked him to create a piece. They wanted a story about ancient Greece and the sea. It so happens that Moschen has studied Greek architecture, ceramics and vase painting, and he has thought a lot about sea images. He and Danielle once lived at a beach house on Cape Cod owned by her father, the writer Norman Mailer. Moschen did many studies there. He attached a hoop to a pole, stuck it in the sand and watched the relationships change between the pole, the hoop and the water as the tides rose and fell. He watched the hoop frame sunsets and distant boats. He took photographs of the full moon shining on the water, or floating atop the waves.

The S-shapes he had made with the floor tiles reminded Moschen of a breaking wave. Maybe he could somehow float a ball on top of a "wave," so it would resemble the moon or a boat. That sounded like the start of a sea story. Moschen painted the floor tiles white and took dozens of pictures of them, separately, in groups, on their edges, on top of each other. He started making the same shape in different sizes out of screening, and painting them. He hung them in his trees. Poring over his photographic studies of everything from doorknobs to cobwebs, he noticed beads of dew balancing on bent blades of grass—confirmation, he inferred, that nature likes to put balls on curved surfaces.

"Those were some of the associative elements I tried

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While trying to think up a new routine, Moschen studies pieces of painted mesh hung from trees in his yard.

to immerse myself in," he says. "Not because I'm trying to record anything of value, but just to impress me and guide my instincts."

After about five months of this, he knew the story he wanted to illustrate: What is in a lover's heart as her sailor's ship moves over the waves beneath the moon, becomes a dot on the horizon and disappears over the edge of the world? He made a big S-wave from a three-foot square of aluminum and started trying to roll a ball along its edges by holding the heavy shape straight out in front of him and twirling it in his palms. He wasn't sure it was possible. "I'd never seen it before," he says, "a ball going uphill on a rotating curved surface. I can't tell you how much pain I went through to get it."

Four months later, he began teaching the technique to three jugglers from Cirque du Soleil. They rehearsed for seven months before the first show but didn't feel confident doing it for a full year. One of the jugglers, Steve Ragatz, says, "If you had someone stand behind you and stick your shoulders with a hundred burning needles, that would give you a rough estimation of what it feels like. Like all good artists, Mike visualizes things in an absolute way and doesn't care much about the obstacles. He couldn't have come up with a tougher way of holding a big sheet of aluminum. Knowing Mike, I'm surprised he didn't decide to use lead balls."

Moschen grew up in Greenfield, Massachusetts, one of four children. His father was a stonemason and factory worker, and the family lived in a housing project until Moschen was 11. He played all the major sports in grade school and junior high, but especially loved the finesse and precision required to control a golf ball with a swinging stick.

One boring summer day when Moschen was 12, his brother Colin and their next-door neighbor Penn Jillette got a book on juggling from the library. "The three of us learned to juggle and unicycle," remembers Jillette, now the taller, talking member of Penn & Teller, the *noir* comedy/magic duo. "We juggled constantly, the kind of practice an adult is unable to do: 'Let's see if we can do ten thousand throws in a row of that.'"

Six shows a day, six days a week

They called themselves the Toss-Ups and began performing at nursing homes and other such venues. Colin eventually joined the Navy. Neither Moschen nor Jillette had any interest in college, so they formed an act called the Tumescos. They landed a job doing six shows a day, six days a week at an amusement park in New Jersey. Between shows, Moschen practiced solo juggling for six or eight hours a day. He rigged a net that went from the corners of a ceiling to his pants, so that when he missed, the balls rolled back to him. By that time he and Jillette had met Teller and begun living together. Eventually Jillette and Teller decided to form an act, with Moschen's good wishes. "I realized there was probably more money in talking than in throwing stuff around," recalls Jillette, "whereas Mike went on to be, in anybody's view, the most significant juggler of the 20th century, and probably the most innovative in history."

Moschen began performing on the streets of New York, toting his juggling balls, torches and unicycle on the subway to his usual spot in front of the Metropolitan Museum of Art. He was with the Big Apple Circus for three years and then signed on with Lotte Goslar's Pantomime Circus because he wanted to learn more about movement. In the early 1980s he worked with clowns Bob Berky and Fred Garbo in an acrobatic variety show called *Foolsfire*, which won an Obie. He and Berky continued together as the Alchemedians for another ten years. Moschen's first solo show was in 1988 at the Brooklyn Academy of Music's annual NEXT WAVE Festival, which led to the PBS special. In 1990 the MacArthur Foundation assured him of $44,000 a year for five years, allowing him, Danielle and Isabella to move out of a loft in the Bowery and into their house in Connecticut. The grant ended this summer, just after Moschen turned 40, so money and age have been on his mind.

He needs to build a rehearsal studio. He now practices in his cramped basement. A triangle like the one in his show, but with its top lopped off, takes up one end. There are piles of books, scientific magazines, videotapes, music and notebooks, and boxes of balls, photographic studies and dancing shoes. In an adjoining room are his workbench, drill press and piles of the ma-

HOW I GOT HERE - IN ONE DEEP BREATH:
Fell out of rowboat,
age 2.
Swimming lessons,
age 2½.
Belly-flop champ,
Camp Wapiti, 1971.
Springboard champ,
Taft High, 1981.
Home Improvement Loan,
First Interstate Bank.
ALAN DYKSTRA,
NEW POOL OWNER.
YOU & I
LENDER
First Interstate Bank

Moschen's wife, Danielle Mailer, and daughter, Isabella, are the inspiration for many performance pieces.

terials he uses to create his props and scenery—PVC pipe, aluminum, rubber gutter stock and coaxial cable.

When he gets tired of being cooped up in his basement, or when he needs room to launch objects skyward, he rehearses nearby in an old, high-ceilinged meeting hall that the owner lets him use. That's where he is today, rehearsing a new piece that involves a curved pole about six and a half feet long. The pole was a piece of scrap left from a contraption he used in a show. Several months ago he picked it up and balanced its curve in his palms. He groaned.

Now he begins manipulating the pole and it jumps to life, twisting like an eel. It becomes an oar, a sail. He flips it over and back. It struggles to escape into the air, but he keeps pulling it down until finally it jumps in a high flight. Several times the wriggling thing clangs to the floor. Moschen grimaces and proceeds.

"The technique is only two months old," he says, still twirling. "At first I tried to rotate it backward and caught myself right under the chin. It won't go in that direction; the thumbs get in the way." He is flipping it now. "There's one move I have to practice outside where I can run away when I miss. I don't want to catch it on the bridge of my nose again." He spins it over his head. "I feel like Yo Yo Ma with his cello, the way it's right there next to his body and he's pulling sounds from it. I'm not creating sound, but I'm creating a partner and moving with it and touching it. It has told me so clearly how it is best seen and heard."

Moschen's fingers are thick and strong, a legacy from his father. He is a sinewy 5 feet 10. His exercise regimen consists of sit-ups, stretches and rigorous rehearsals. "My musculature should change according to the work," he says. "I should let the work and nothing else shape me." Like any athlete, he worries about injuries. Last year a virus in his shoulder made him think his career was over. Because he spends hours operating hand tools, he periodically gets "trigger finger," a stiffening that can cause fumbles onstage. When he goes on tour, he personally packs all 1,700 pounds of his props into big cases for shipping, and then he helps load them into a rental truck; his hands end up nicked and blistered, an occupational hazard probably unknown to Yo Yo Ma.

He is accompanied on tour by three crew members and his longtime lighting designer Dave Feldman, whose work is crucial to the show's magic. On the afternoon before a show in Keene, New Hampshire, Moschen rehearses in the triangle, partly for practice and partly to pump up the stagehands' enthusiasm. "I'm getting an odd rebound," he says at one point. "Maybe the sides aren't tight enough." A bit later, looking dissatisfied, he puts a ball in the center of the triangle's bottom board. It rolls slowly off the front. "The back is too high," he says. A crew member levels it.

Feldman needs him to walk through various pieces in order to fine-tune 150 or so lights. Moschen uses the opportunity to get comfortable with the stage's width, depth and height, to lessen the chance that he or the things he throws will bang into walls and ceilings. He also examines the floor for low spots, ridges and other imperfections that might throw him off. During lulls, he balances props from the show on his head and chin—a teardrop shape, a long vector, a tetrahedron.

About 90 minutes before the show begins, Moschen disappears to rest for 20 minutes. Then he does stretches while "waking up" his hands by manipulating the crystal balls. He pauses to eat the standard backstage chicken dinner, puts on makeup and a leotard, checks a few props and wonders where the inevitable glitches will ambush him tonight. He's almost ready.

But not as ready as the crew; the curtain starts to rise before Moschen gets settled on the floor with the crystal balls. He scrambles, then begins. The audience sees the usual display of power, finesse and expression, but in the wings between segments of the show Moschen is edgy, exasperated by small errors. He rushes offstage and searches in the dark for the powder bowl. (He uses

baby powder to keep his hands dry.) "There's hardly *any powder* in here," he hisses before rushing back onstage. He fumbles twice on the hoop-and-stick piece. "It's the *wrong hoop*," he sputters when he comes offstage. The cues for costume changes tangle him up even more. He almost trips over some protruding props. Nevertheless the show looks spectacular from the front, and at the end Moschen gets his usual standing ovation.

"I cannot do it like this," he fumes minutes later to Feldman. "I already have to make 2,000 instant adjustments a night just to do the work. I don't want to have to make more because of backstage screwups." Feldman promises to speak to the crew and adds, "But it really got your energy up, and the show went great." Moschen snorts, but his irritation soon gives way to an expansive mood. "He's so human after a performance," notes Danielle, "because he's moved the mountain again."

A small group always waits for Moschen following a show, and he always obliges them. Offstage, there's nothing arrogant or showbizzy about him. He invariably dresses in khakis and sneakers. Tonight a couple of old friends from the area are waiting, along with a few aspiring young jugglers. One of the jugglers asks for advice. "Don't just do the stuff that's already out there," Moschen tells him, "or you'll just be a mirror. Try to find the humanity in the magic and maybe you'll come up with something of your own. It's the humanity that gets you there, not techniques."

"Basically he's working all the time," says Danielle. "Like this morning—I woke up at 6 and he was already outside taking pictures of dew on some branch, lying on his back. He's always working out some idea or making some sort of mental notation. It permeates our home. There's no question that his ultimate meaning comes through creating. The performing is just the gravy. He's happiest being in his little cave downstairs, manipulating objects and defying gravity and figuring out how to do the impossible."

Standing outside a wooden triangle, Moschen keeps as many as five balls simultaneously bouncing off the bottom and sides in a spectacular interplay of sight and sound that is the highlight of his performance.

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By Simon Winchester

A century after his death, everyone seems to love RLS

Partly it is because of his life, bravely lived despite pain; mainly it is the stories, from Treasure Island *on, which still disarm us*

In the unlikely setting of a car dealership in San Francisco—one of those Corinthian-columned and acanthus-leaved palaces of marble on Van Ness Avenue that had been built 60 years ago for showing off Studebakers or Pierce-Arrows, but which now display rows of sleek sedans from Japan—I had been asked to talk about the "New Pacific" to a group of a hundred customers, men and women, pleasingly well-heeled and comfortably middle-aged. I had reached the part where I was listing some of the writers and artists who had become enraptured by this greatest of all oceans: Herman Melville, Richard Henry Dana, Paul Gauguin, Rupert Brooke. And then I mentioned Stevenson—Robert Louis Stevenson—and the gathering, which until then had been a little cool, began that warm-kettle murmur which tells a nervous speaker he is beginning at last to touch his listeners, that things might begin to take off.

I sensed the shift, and tried to move to meet it. Hadn't Stevenson, I asked, though the grandson of a lighthouse builder from Edinburgh, been married on Post Street in San Francisco, just a few blocks away? Hadn't the woman he chose to marry been living down the coast, in Monterey? Didn't the couple spend their honeymoon up

With Samoans, 1892: RLS (center); wife, Fanny (to his left); mother; stepson, Lloyd Osbourne (arms crossed); stepdaughter, Belle Strong (with her son); Joe Strong (with parrot); and Mary Carter, the Australian maid.

near Silverado in the Napa Valley, staying in a miner's hut in the shadow of Mount St. Helena? Wasn't Stevenson, in fact, something of a Bay Area local hero? The audience, who had expected dull stuff about the rising economies of Korea and Malaysia, or the politics of China, nodded their pleased assent, as if to say that yes, *this* is the Pacific, the Robert Louis Stevenson Pacific, that we want to hear about. And so I decided to see if it was possible to judge, by way of no more than an idle experiment, just how popular Stevenson was. How many of those who were sitting in the showroom that night had read, for instance, *Treasure Island*?

The response came as a small epiphany. Every single person sitting there, to my surprise and I suspect to their own, raised a hand. All of them, long ago, had read, or had had read to them, the book that begins at the Admiral Benbow Inn with the "black spot" and ends on the journey back from Spyglass Hill. Could they remember characters? I pressed. "Long John Silver!" a number of them shouted. "Ben Gunn!" said a couple. "Jim Hawkins, Jim Hawkins!" There was a resonant pleasure now—and though we then moved on to talk of other and more sober things, the small rapture of that moment lingered like a scent of tweed and heather and Stockholm tar, and it permeated the rest of the evening.

When the talk was over, a somewhat elderly lady, genteel, educated, patrician, white-haired, came up to me. She had a 7-year-old great-grandson, she said. The boy was a handful, a great reader, a great adventurer, a climber of trees, a scuffer of knees. She liked reading to him at bedtime, she said, and after tonight she would buy *Treasure Island* and read him that—she could kick herself for not remembering before. But what about another from her own past—what about *A Child's Garden of Verses*? Would that be a good one too? And *Kidnapped*? And *Dr. Jekyll and Mr. Hyde*? "We all so loved Stevenson when I was young. Do you imagine this generation will like him too?"

Treasure Island, with Jackie Cooper and Wallace Beery, was most popular of some 20 films of Stevenson books.

A £100 advance for Treasure Island

The figures suggest that they do, and that succeeding generations will as well. Not once, since Cassell & Co. paid Stevenson the advance of £100 for the rights to publish *Treasure Island*, has this one book ever been out of print. There have been editions in (among others) Zulu, Welsh, Ukrainian, Kamba, Braille, and Pitman's shorthand. It has been turned into countless plays, films, pantomimes, cartoons and a musical, and reworked as a science-fiction thriller for television. Few are the bookshops where you will not find a copy—under "Literature," or "Children," or "Adventure." It will, if the bookshop is any good, be there.

Its success in 1883 delighted Stevenson, not least for financial reasons: he was a great spendthrift, and until his final years, perpetually broke. The book's continuing success today would have amazed him. For his literary friends had derided it, calling it only a "rattling good yarn," and dismissing it as a potboiler (which, as it took him only a month to write, might seem a reasonable charge). But literary figures from later times have been infinitely more kind—not just to this most successful of books, but to the whole canon, to the whole life of this frail, eccentric, indomitably enthusiastic, majestically irresponsible and unhappily short-lived Scotsman.

"I like hourglasses, maps, eighteenth century typography," wrote Jorge Luis Borges, the blind sage of Buenos Aires, and one of the greatest storytellers of this century, as RLS had been of the last. I like the "roots of words, the taste of coffee and the prose of Stevenson." That was in 1960. Thirty-three years beforehand, G. K. Chesterton had written a Stevenson biography (of which there have been at the very least 50, with 4 more in the past two years) in which he placed due weight, gave due stature, to the bag-of-bones who, since 1894, had been lying in that famous grave on a hilltop in Samoa.

And four decades before Chesterton's work, there was the tribute from Henry James, who had become a firm friend of Stevenson's since being invited to enjoy "a day near the sea and among the pinewoods . . . a fair bottle of claret" in Bournemouth:

"It has been his fortune . . . to have had to consent to become, by a process not purely mystic and not wholly untraceable—what shall we call it?—a Figure. Tracing is needless now, for the personality has acted and the incarnation is full. There he is—he has passed ineffaceably into happy legend."

In the 1953 release of *The Master of Ballantrae* Errol Flynn, in the title role, has it out with a hostile redcoat.

Early silent version of *Dr. Jekyll and Mr. Hyde* provided John Barrymore (right) with a starring role in 1920.

People universally react well to Stevenson's name, and such memory as it conjures up is warm and comforting, like an old blanket. They like his books, even if they remember them no more than mistily from childhood. Most great storytellers of the age—Conrad, Rider Haggard, Twain, Kipling—were respected and revered; but they were not, as men, necessarily loved. Something about Stevenson has made him into a subject of near-universal affection.

"If you don't like Stevenson," wrote Borges, "there must be something wrong with you." And he meant Stevenson the man, not just the works of the man whom his Samoan hosts had called Tusitala, "the teller of tales." His life and works became inextricably entwined for the readers of his day and for countless fans, Kumba-speaking and Braille-reading among them, in the ten decades since. They remain inseparable. A writer's writings are what generally define him to his followers: in the case of Stevenson, his life has also gone on to define his legacy, and perhaps more firmly than his many works. People, in short, like the story of Stevenson, even as much as they like his stories.

It is a hundred years since Robert Louis Balfour Stevenson died of a "thundering apoplexy," a stroke. "Do I look strange?" he asked, as he rose from his chair, shakily. He had been in an expansive mood on that early southern summer's day. He was preparing mayonnaise for a salad, standing with guests on the wide veranda of the great wooden house he had built for himself and his entourage in Samoa. He grasped his head and sank to his knees before Fanny, his wife. The last sentence of fiction he ever wrote lay just a few feet away: it contained the phrase "A wilful convulsion of brute nature." He died that night, the 3d of December, 1894, just 44 years old.

He wrote like a whirlwind all his adult life. The standard editions of his works—the Waverley, the Edinburgh, the Skerryvore, the Pentland, the pocket-size Tusitala with the three-palm-tree colophon—run to between 26 and 35 volumes. His collected letters—he was as prolific in private as he was when on commission for *Scribner's* and *Young Folks* and *Cornhill* and *London* magazines, and for his various publishers—fill eight big books, in the new 1994-95 edition.

Much of what he wrote has of course become buried by time and changes of fashion: few now chance upon such failures as *Heathercat*, *The Great North Road* and *The Young Chevalier* (works that were singled out in the first real criticism of his writing, a study published in 1924, which compared RLS to a singer who could not hold a note, the creator of occasional brilliance, but one who was unable to sustain the necessary basso continuo that, in the long-forgotten writer's view, was the mark of true genius).

But much else remains, and more than that, so does the saga of his life—a life with which he, to judge from his constant references to it, was as fascinated as anyone else. He would have written a wonderful autobiography, he found himself so interesting. His near-perpetual sickness, his Lowland Scots identity, his deliberate and ha-

Simon Winchester is at work on a book about China's Yangtze River. He has written for SMITHSONIAN *on Magellan and the Santiago de Compostela pilgrimage.*

Left: RLS with his father, mother and nurse, Alison (Cummy) Cunningham, in Edinburgh c. 1866. Above: After he qualified for the law in 1875, he posed in wig and robe—but never practiced.

bitual rootlessness—"the great affair is to move" he wrote—were the three cornerstones of his life. As a recent biographer put it: "Had he not been born in Edinburgh, he might have enjoyed better health; had he been healthier, he might not have travelled so much; had he not travelled, he would not have written as he did; yet had his health been better, he would not have died with his career only half complete, his potential untested. Fate, if it exists, had fun with Louis."

Fun—perhaps that was it. His life—but for his ill-health—is the kind of life each one of us, I suspect, would like to have tried. Perhaps that is one reason why we like him so. He went where we would like to have gone and told us, exuberantly and eccentrically, what these faraway places and peoples were really like.

He was born on the 13th of November, 1850, in the coal smoke and sea fog and Protestant miasma of Victorian Edinburgh. The family was prominent and comfortable from his grandfather Robert Stevenson's triumphs in the fashioning of lighthouses, prisons, harbors and bridges. "I was an only child and, it may be in consequence, both intelligent and sickly." The self-absorption, of which this shows only a scintilla, had become well developed by the time he wrote this, in San Francisco 30 years later. "My recollections of the long nights when I was kept awake by coughing are only relieved by thoughts of the tenderness of my nurse. . . ."

That nurse, whom he called his second mother, was Alison Cunningham—"Cummy." Deeply religious, she wielded an enormous influence on the young boy, reading to him from the Bible and telling him tales of ghosts and body snatchers (she was a firm believer in the supernatural) that made his imagination range wildly from his fogbound room on genteel Heriot Row. Analysts who look for clues—to what makes Stevenson run?—point invariably to Cummy: she helped him to his lifetime love of female company, and she opened his eyes to the strange wonders, real and imagined, of the world outside. It is often pointed out that he traveled to places remote enough to be almost dangerously exotic, a taste explained somewhat by knowing of Cummy and the tales she told the young boy inside the gray granite walls of his Calvinist prison.

"The world is so great and I am so small / I do not like it at all, at all" was an early entry in *A Child's Garden of Verses*, written as part-memorial to his own vanished childhood. I suspect it was Cummy's remembered influence that eventually transformed that couplet into "The world is so full of a number of things / I'm sure we should all be as happy as kings."

The young RLS showed more bravery than might be supposed, for one of such waiflike stature. He learned to canoe in rough water. He went down in a diving suit. He took up sailing and discovered a love for islands, and for maps of them. The island of Earraid, wild, ragged, all heather and sea spume—and near-uninhabited these days—lies off the bigger Scottish island of Mull. Stevenson used it as his model for *Kidnapped*, and maybe parts of it in *Treasure Island*. Psychiatrists say why: islands are small, cozy, easy for the child's mind to encompass and

call home. Stevenson loved the small streams near home; he loved the islands off western Scotland; he loved the skerries where his grandfather had built lighthouses and where his uncle Alan built Skerryvore, the grandest Scottish rock light of all, after which RLS was to name his second-most-famous home. (His Skerryvore was in Bournemouth, where he wrote *The Strange Case of Dr. Jekyll and Mr. Hyde*, and where he gave Henry James his claret and where James left a glove, still to be found in a California museum.)

He nearly became a lighthouse builder himself, and read a paper on a newfangled kind of light to an association of engineers. But the profession held no real attraction for him: when he was 16 he had written a small historical pamphlet called *The Pentland Rising*, and felt proud enough of it to think of becoming a writer. Only his father's influence prevented him from plunging in right away: old Thomas led him to the law, but he never practiced it once he qualified as a barrister in 1875, after a wild, foppish, bohemian university career, punctuated no doubt by drinking bouts and, in a new kind of adventuring, the loss of virginity in an Edinburgh brothel.

He was a dandy, known as "Velvet Coat." He learned to swear like a trooper. He became famous for befriending and defending the indigent and the downtrodden. "I was the companion of seamen, chimney-sweeps and thieves," he wrote. He was kind to servants, defended beggary and prostitution. Straitlaced Heriot Row took it all badly. "You have rendered my whole life a failure," said Thomas, on discovering that his son was not to be the good Church of Scotland heir he had supposed.

Young Louis went down to Suffolk, and life and career began to begin. Years later, in Samoa, he was to remember his youth, in one of the most famously elegiac of all of his poems: "Sing me a song of a lad that is gone / Say, could that lad be I? / Merry of soul he sailed on a day / Over the sea to Skye. . . . / Billow and breeze, islands and seas, / Mountains of rain and sun, / All that was good, all that was fair, / All that was me is gone."

The "delicate patient" heads south

But before long he fell ill, coughing, short of breath. His was a classic case, as diagnosed then, of what I remember from my own childhood was referred to as "delicacy." Damp and cold irritated it. So his doctor ordered the delicate patient south, to Menton, in France, where there were so many Scots suffering from TB that a Presbyterian kirk nestled among the orange groves. Stevenson apparently did not actually have TB, it has been determined, but for years he had periodic seizures and spit blood. Sending him into exile in France was a radical step—and one that would have been even more recognized as such had anyone foreseen that the patient had already lived for fully half of his life.

From here the pace of his adventures gathers, as does its present familiarity. After Menton, and Paris (where he wrote well enough in French to be regarded still as "*le plus français des écrivains anglais*"), he journeyed, along with his cousin Bob, to the town of Barbizon, at the edge of the forest of Fontainebleau. It was here, in 1876, that he met Fanny Osbourne, the headstrong American adventuress (ten years older than RLS) who, separated from her feckless philanderer of a husband, Samuel, back in California, had come by train and *diligence* to Grez-sur-Loing nearby. With her two children, Belle and Lloyd, Fanny was spending the summer consoling herself.

The meeting culminated in the marriage, two years later, in a house close to that Van Ness Avenue car dealership; and it coincided with the making and the writing of RLS's first book. He was determined to hone his writing skills with an easy start, a travel book. So he took a canoe named *Arethusa* from Antwerp to Pontoise. He

RLS chartered the schooner *Casco*, exploring various Pacific islands for months before settling on Samoa.

In the library at Vailima during the final years, RLS often dictated stories to his stepdaughter, Belle Strong.

went with an aristocratic friend who paddled a boat called *Cigarette* alongside, and the pair journeyed for more than 200 amiably rain-soaked miles through the fields of northern France.

Two years later *An Island Voyage* was published. It was dull in terms of occurrence and landscape, and it sold fewer than 500 copies. But it was reviewed, and quite decently, in more than 20 papers and journals. Many of the critics were prigs; few of them liked the many oblique references to sex. But something fresh might be in the air, the notices seemed to say. A young Scot, excitable and nervous and sickly by reputation, but by all accounts a man made of some kind of interesting steel, and who liked having unusual adventures and then writing about them, was embarking on a literary life. And now some inborn, innate chronometer starts to quicken the rate of Stevenson's existence. For there came, in almost indecently short order, one far better travel book, a journey to America, a marriage, a honeymoon, a return to Scotland and then a great Niagara of writings. Within the next ten years all of the most famous of his works were done, his reputation was created and enhanced and rendered near-indelible.

And yet the legend itself, the making of what Henry James had called a "Figure," was not yet made. That making belonged to the final six years: these next ten were the period of the consolidation and compaction of the figure that the literary world knows, and which it still admires today. The first good book was his account of a wandering with Modestine, a donkey. He said she was "a love," when he bought her for 65 francs and a glass of brandy. She turned out to be a headstrong and willful beast, who snorted and laid back her ears. "My route is pretty well laid out," he wrote to his mother. "I shall go near no town till I get to Alais." Nor did he, and nor do the thousands who these days journey through the Cévennes in the pair's six footsteps—for *Travels with a Donkey*, published in 1879, started an industry for which the French Tourist Board, among others, has been endlessly grateful.

"I travel for travel's sake"

An illustrative omission—"The only art is to omit," RLS wrote later, remarking on the business of travel writing—can be found in the work. One of the most famous passages, alluded to earlier, goes thus: "For my part, I travel not to go anywhere, but to go. I travel for travel's sake. The great affair is to move . . . to come down off this feather-bed of civilisation, and find the globe granite underfoot and strewn with cutting flints."

Fine, as it goes; but ten years ago a writer discovered Stevenson's journals of the time, and this addition: "I travel for travel's sake. *And to write about it afterwards, if only the public will be so condescending as to read.*"

So there was a nice commercial edge to Stevenson, a realism that rendered the romantic side of him a little less fragile.

But romance was with him when he embarked for the first time to America—"Danger, enterprise, hope, the novel, the aleatory, are dearer to man than regular meals," he wrote to a friend once the S.S. *Devonia* of the Anchor Line had taken him (as Robert Stephenson, an alias supremely ill chosen) from Greenock, Scotland, to New York. He stated his business as "clerk"; he was one of 256 passengers, most of whom, in steerage, were immigrants. He decided to write about them, and about those who took the immigrant trains on from Jersey City to Chicago, from Council Bluffs to California via a railway line that had been joined up only ten years before. The books would be published many years later: his goal for now was to meet Fanny, to marry her and to bring her home.

And so he did all this, and now museums and memorials to his name litter the places where he once lived. His desk and hip flask are down in Monterey; there is a golf course named Spyglass Hill nearby, and an R. L. Stevenson Road. Treasure Island lies beneath the Bay Bridge in San Francisco; there is a granite column in Chinatown and a state park north of the city. Henry James'

forgotten glove (too tight for a normal man to put on now, perhaps badly shrunk) lies in the Silverado Museum in Napa, and there is a private estate nearby with roads called Bournemouth and Swanston. (The world's best collection of what is known as Stevensoniana is actually on the East Coast: it was given to Yale by the man who made his fortune from inventing Green Stamps.)

Back home, after presenting Fanny to his parents, he went to Braemar, near where the royal family now summers at Balmoral, and wrote, in one month flat, the book he called *The Sea Cook*, but which later became better known under another name.

He once explained its origins—his own painting, with watercolors, of a map of an island for his stepson, Lloyd. "As I pored over the map of Treasure Island," he said, "the future characters in the book began to appear there visible among imaginary woods . . . as they passed to and fro, fighting and hunting treasure. . . ."

If a crown was ever needed for his triumph, *Treasure Island* provided one. Henceforth Robert Louis Stevenson—or just those "beloved initials" of his —would be as famous as any writer in the age before electronics could be. He was feted where he went; called upon by the good and the great; fussed over, celebrated, sought after, dined and revered.

He wrote more furiously than ever, and he became ever more spectacularly ill, coughing up a good deal of blood (he called his ailment "Bluidy Jack"). Fanny took him down to Hyères-les-Palmiers on the French coast near Toulon, where, in a vain attempt to regain his health, he inhaled tar, exposed himself to the dry gusts of the mistral, drank small glasses of ergot and sat in the winter sun: he worked on *Prince Otto* and *The Black Arrow*, wrote plenty of poetry, and rewrote *The Silverado Squatters*. He kept alive, but by the time he and Fanny went back to England, to Bournemouth, where he wrote *Dr. Jekyll and Mr. Hyde* and *Kidnapped*, he had only ten years of life left.

And so, as the clock ticked relentlessly, urgently on, RLS embarked, supposedly unknowing, upon his final phase, the period in which the legend truly emerges. In 1887 he left Europe for the last time, aboard the steamer *Ludgate Hill*, which passed the coast of Newfoundland and arrived at a berth in Manhattan in September. He was now a famous man: had this been today he would have been on with Larry King or Barbara Walters, and the image would have burned brightly for a while and then, under scrutiny, faded. But Stevenson kept his own counsel and hid out in the Adirondacks at Saranac Lake. (A local museum holds a pair of his boots.)

Then, in his sedulous search for the different and the adventurous, he took an old trading schooner, the *Casco*,

At Vailima, "the place of five waters," Stevenson built the house he died in. It is maintained as he left it by new owners. Left: RLS monument is on Portsmouth Square in San Francisco's Chinatown.

A portrait made in 1893 conveys the joyful spirit—and the physical vulnerability—that marked his life.

through the Golden Gate and on a long odyssey across the Pacific. He went to the Marquesas (where he found naked men with tattooed legs). He went to Hawaii, where he recorded the sad plight of the exiled lepers of Molokai, and took up the cudgels on behalf of Father Damien, the Belgian Catholic priest who helped them, and who had been attacked by the local Protestant clergy. He eventually landed at Apia, the only harbor in Western Samoa, on the 7th of December, 1889—he was carrying a camera and wearing faded yachting trousers. He looked (according to a local missionary) much like a tourist down on his luck.

He was anything but. He promptly declared himself in love with the place, in love with Polynesia. Perhaps one day he would visit the Philippines, or maybe China. One day he might return to Scotland; but for now, in the sunshine and in the soft, green, bird-loud jungle on this speck of volcanic rock set square in the middle of the blue Pacific, he would set down his bindle and rest a bit. In February 1890 he paid rather more than 3,000 Chilean dollars (about 400 English pounds) for 314½ acres of uncleared land, an estate known as Vailima—"the place of five waters." Here he built his house, and here, after four happy and productive years, in which the maturity of his genius became clear, he would die.

And why, then, is he still loved—what makes the magic last? The sepia pictures from Samoa hint somewhat at some reasons—the pictures of Stevenson, the Scotsman far from home, surrounded by adoring staff, with Fanny by his side, with his stepchildren, Belle and Lloyd, ranged around him, with his mother, Maggie (who was to outlive him in the way that craggy old Scottish ladies seem so destined to do), in the place of honor. Close up it is the image of Stevenson alone that haunts and that captures so much of what it is that makes him a kind of hero, even all these years later.

What it is, above all, is that he was so patently and obviously so very frail. The great sad eyes, the fine and wispy mustache, the wan countenance and narrow shoulders, the weakling chest: this was a man whom we might think scarcely capable of walking, yet who sailed and dived and climbed, and lived and died in faraway Polynesia, and did the things that the rest of us dream about—and that while he was sickly and poor. He was a mortal, ordinary, flawed, restless, irresponsible, weakly, courageous, inquisitive, complicated man—a writer who died when his genius was only half realized, who died before anyone could unkindly point to a decline in his abilities, who died with magic still in the air.

The same Samoan chiefs who had cut the "Road of Loving Hearts" to Vailima, now chopped a path through the jungle to the place where he would be buried. Today they do not allow gunfire, nor any loud noise, on the hill, so as not to disturb the spirits of either Stevenson or Fanny, who was brought back to Samoa when she died in 1913. There has been some disquiet that the Mormon-run foundation that has recently leased the hill and the house (for payment of one coconut a year), may somehow spoil it, turn it into a tourist attraction, but so far it has not.

All around the world there are epitaphs to Stevenson. But there is none more suitable than that on Samoa, written on the side of the tomb placed in a clearing on the side of Mount Vaea. Stevenson had guaranteed its suitability by writing it himself, some years before: "Under the wide and starry sky / Dig the grave and let me lie. / Glad did I live and gladly die, / And I laid me down with a will. / This be the verse you grave for me: / 'Here he lies where he longed to be; / Home is the sailor, home from sea, / And the hunter home from the hill.'"

In an N.C. Wyeth picture from *Kidnapped*, David Balfour explores Earraid, a Scottish island that RLS loved.

By Richard Wolkomir

Seeking gifts from the sea, Sanibel-style

Beachcombers descend on the continent's premier site for shelling, a Florida island where everyone is mad about mollusks

Clutching two Florida fighting conchs, a swimmer (opposite) rises from waves. Although the boy couldn't keep his prizes (live mollusks are protected), shellers (above) find scores of treasures on the beach daily.

"This is a sea whip," says R. Tucker Abbott, scooping up what seems to be a handful of purple twigs from a Sanibel Island beach. "It's hard to believe this is a living animal, isn't it?" It looks more like hedge trimmings. "Actually, it's a colony," says the dean of American malacologists. "Thousands of tiny polyps, all of them dividing up the chores."

But here comes the good part, to which Tucker Abbott has devoted most of his 75 years: mollusks. "A snail, *Simnia*, lives on the sea whip and eats the polyps," he says. He sounds like a football zealot pumped by a Super Bowl blitz. "It's usually a pair of snails, and the male chases away other males," he says. "They eat just so many polyps—never enough to kill the sea whip."

Abbott, squinting in the Florida sunshine, looks at the Gulf of Mexico, where all those neat mollusks live. He wears his trademark Hawaiian shirt illustrated with cone shells and tritons, his straw Panama, and his thick eyeglasses. He is oblivious to the passing beach walkers, even though most of the shell books stuffed into their back pockets are by him.

He has written something like 30 books about his favorite phylum. More are coming. He is a malacologist, a scientist who studies the estimated 100,000 molluscan species, from quahogs in the mud to unnervingly smart-eyed octopuses. But while some of Abbott's books are authoritative scholarly works, most have titles like *Collectible Florida Shells* or the *Golden Guide to Seashells of North America.* They pop up all over on Sanibel Island, the continent's top shelling spot. And no place else has more out-before-dawn, just-this-murex-and-I-swear-I'll-stop shelloholics.

One of Sanibel's main thoroughfares, Donax Street, honors a clam. And there is Junonia Street, after a rare, gracefully contoured, volute-family shell spotted like a leopard. Finding a junonia gets your picture in a Sani-

Photographs by Richard Howard

bel newspaper. In some hotels, a guest who brings back a junonia from the beach will find celebratory bells ringing in the dining room. Sanibelians collect other shells by the bagful, from kitten's paws to turkey wings. Hotels even provide special shell-cleaning stations.

Right now, all around Tucker Abbott, bag-toting denizens of the beachside hotels and time-share condos are walking the water's edge, eyes on the sand. They pounce on softly rounded slipper shells, or on the shells of coquina clams, which look like butterfly wings, colored blue, mustard or rose. On Sanibel—thanks to favorable currents—shells lie in heaps. Calico scallop shells, arks and yellow cockles also go into the collectors' plastic supermarket bags, or into drawstring bags from boutiques. Some collectors carry bags of plastic mesh. Others wield plastic milk jugs with a big hole scissored out of the front. Or they drop their shells into a child's plastic bucket, or into their hat.

All the while they do a local folk dance, like this: a sunburned newcomer suddenly bends at his executive-size waist. He plucks at the sand. He straightens triumphantly, holding . . . a Florida fighting conch! Farther up, a Generation X-er wearing rolled-up jeans bends. She straightens . . . lightning whelk! All along the beach, shellers execute that peculiar bow: the "Sanibel Stoop."

First to do it were the Calusa Indians, who harvested clams, oysters and conchs, and used the shells as a building element in their terraced mounds. Early Spanish explorers may have been the first to collect Sanibel shells as take-home souvenirs. By the 1950s, Sanibel—reachable only by boat or by ferry from Fort Myers—had become a winter hideaway for well-heeled nature lovers. They screened their discreet beach houses behind palmettos and Australian pines, where brown pelicans roost. They turned swaths of the island into wildlife preserves. The rest they cultivated as a subtropical Garden of Eden, where great egrets wade the surf and alligators sometimes stop traffic. In the 1960s they lost a war against construction of a causeway from the mainland. But they did win a four-stories building limit, so that the new hotels and condos the causeway brought barely peep over the sea oats bordering the shell-strewn beaches.

"It's a boneyard," says Tucker Abbott, surveying Algiers Beach, where he just found the sea whip. He shakes his head. How many Sanibel Stoopers realize their calcium-carbonate baubles are actually the skeletons of nifty animals? "Everybody likes birds because they hop and tweet, and mammals wag their tails, but only a few of us are into mollusks—the creatures, in addition to the shells they inhabit," Abbott says sadly. In fact, he is sojourning on Sanibel, away from his home on Florida's other coast, to fix that mollusk appreciation gap, big time.

He is the godfather of Sanibel's new Bailey-Matthews Shell Museum, scheduled to open later this year. The Smithsonian's National Museum of Natural History, where Abbott began his career, houses the world's largest shell collection, but only a handful of its more than 15 million specimens are on display. With more than 2 million shells, to start, the new Sanibel museum

Specimens from Sanibel's Bailey-Matthews Museum, opening soon, offer glimpses of beauties from the deep: from left, an Australian wentletrap; lion's paw; angel wings, prized for their delicate valves.

is no slouch. And it is the only museum devoted exclusively to shell-making animals and their kin, showing mollusks in their habitats. "We tell the whole story of malacology, and nobody else does more," says Abbott. "I hope it will be a world center for disseminating information about mollusks."

Glancing over his shoulder, as if fearing arrest, he whispers: "Malacology is my religion!" Abbott's father worked as a paint manufacturer in Massachusetts. Little Tucker found his first seashells on Cape Cod beaches. Summers, he and his brother visited his mother's family in Bermuda. "I'd see all these biologists there from Yale and Harvard—I'd bring them sea urchins and other creatures for experiments, and I knew that was what I wanted to do," he says. One mentor was William Beebe, the pioneer of deep-sea submersibles. Tucker imitated Beebe's writing style, eager to become a writer himself.

The Depression forced Tucker's father to take a new job in Montreal. "Another kid and I started the Boys' Museum of Westmount in my basement," Abbott says. "I was curator of botany, birds and shells." He and his co-curator set off on a collecting trip, by bicycle. They pedaled 2,000 miles. Tucker returned determined to become a malacologist, but he faced one obstacle. "I'd been a *terrible* student," he says. "I flunked my first year of high school because I spent too much time outdoors looking for shells or weird insects."

A teacher-aunt tutored him so well he got into Harvard. There he found a "second father," malacologist William J. Clench. When a job opened at the Smithsonian, Clench told him, "Kid, you go on down there—you can finish your degree at night." Sorting shells by day, helping his wife change the diapers of their two infants and studying at night, Abbott eventually earned a doctorate. Meanwhile, he discovered he had a popularizing flare. For a TV show on skeletons, he appeared with boa constrictor bones. "I used to wear a bow tie then, and I sat next to a human skeleton that wore a matching bow tie," Abbott remembers. He became a research scientist at the Philadelphia Academy of Sciences, and then assistant director of the Delaware Museum of Natural History. Meanwhile, besides scientific papers, he churned out scholarly books and shell guides.

He also visited mollusks in situ. "I was in Fiji on a Chinese junk . . ." A typical start to an Abbott story. This one is about his first expedition, when he was still a student. "The crew, Filipinos who were treated badly, mutinied, and when we got to Samoa they were jailed," he says. Abbott himself left the junk. He fell in with the son of a Samoan chief. "I was adopted into the family and collected shells for Dr. Clench, back at Harvard," he says. Once, on a reef, a huge shark fin circled him. Abbott smacked the water in front of the shark's nose with his bag of shells. The fin veered out to sea.

But his worst experience—even today, remembering, he looks bereft—was collecting 50 rare cone shells and cowries from a Samoan reef. He boiled and cleaned them, and left them to dry on his porch. He returned to find changelings. "Instead of 50 lovely cones and cowries, there were 50 crumby shells," he says. He knew

Two king's crowns (left), often found in Florida mangrove-swamp mud flats, and the spiny Victor Dan's delphinula, from the Philippines, are some of the Bailey-Matthews' molluscan marvels.

During his career as a beachcomber-scientist, R. Tucker Abbott has brought tenacity and a spirit of inquiry to the science of malacology.

the culprits: 50 terrestrial hermit crabs had commandeered the empty shells and executed the switch. After a lot of bush beating, he retrieved some of his prizes.

He got back to Harvard just in time for World War II. He enlisted, becoming a Navy dive-bomber pilot. When the Navy needed someone to study parasite-carrying tropical snails, however, he enthusiastically volunteered to set up a malacological research station on Guam.

A chemical to kill the snails' eggs was the goal. But nobody had ever seen the dot-size eggs. One day, looking through his microscope at a rotten coconut husk, Abbott watched a snail expel one tiny egg from her oviduct. Troweling with her proboscis, she hid the egg under her fecal pellets. Now, knowing the snail's egg-hiding trick, researchers were able to develop the needed molluscicide.

Abbott became an expert on disease-bearing snails. "But my heart belongs to marine mollusks," he says. Species have been named for him, like "Abbott's cone." And he can tell you that mollusks live from oceanic deeps up to the Himalayan snowline. They live on each other, too. "In California, 95 species of mollusk were found living on just one thorny oyster!" says Abbott. A tiny snail lives embedded in starfish arms. A certain scallop must outgrow the coral into which it burrows or it is entombed. A purple sea snail of the open ocean floats on a frothy raft of self-made bubbles. Some clams build nests by secreting masses of brownish threads, which Mediterranean peoples once spun into valuable cloth.

"One mollusk is just a twenty-fifth of an inch, but it has a brain, a stomach and other organs—the computer people should pay attention, because *that's* miniaturization," Abbott says. At the opposite extreme, he notes, was a 73-foot giant squid found near New Zealand: "It had eyes like grapefruits."

Mollusks are soft-bodied and slimy. Their "mantle," a capelike sheet of tissue, secretes calcium carbonate that can form a shell, which is both an external skeleton and a fortress. And certain mollusk groups have a tonguelike "radula," covered with raspy teeth, for such chores as drilling through the shells of other mollusks. Beyond these traits, however, molluskdom is a bedlam of eccentrics.

Abbott cites the giant clam. Its peculiarity is not just its hugeness, although it can reach four and a half feet across and close to 600 pounds. What tickles Abbott about the giant clam is that it is a farmer. It lives on algae that it cultivates inside its own body. Millions of the microscopic seaweeds grow in the tissues of the clam's mantle. Clear lenslike organs on the mantle's surface allow sunlight to bathe this internal "garden."

Clams and other double-shelled mollusks, such as oysters and scallops, are called "bivalves," from the Latin for "folding doors." "Univalves," which include snails and conchs, have a one-piece shell. Other mollusks—

Whenever they weary of Vermont winters, writer Richard Wolkomir and his wife, Joyce, repair to Sanibel for a restorative interlude on the beach.

squids, for instance—may have only a small internal shell or, like octopuses and garden slugs, no shell at all.

It's a motley phylum, from the clams that live buried in wood to the airborne squids that spread winglike fins and glide above the ocean's surface. Some oysters alternate their sex, male one year, female the next. Female cowries sit protectively on their eggs, like brooding chickens. The Pacific harp sacrifices a detachable portion of its own foot as bait to catch crabs. Clams are blind. But scallops have scores of tiny eyes mounted like jewels around the edges of their upper and lower halves. The eyes may be laser red, or as blue as Paul Newman's.

Sanibelians focus on mollusk shells. And Abbott can tell you about them, too. Calcium in a mollusk's blood concentrates in the mantle and precipitates out as crystals, which form the shell. Mollusks secrete calcium mostly at the leading edges of their shells. For instance, a clam shell grows along its "lips." A snail shell grows around the opening where the snail's head peeps out. Hormones influence the shell's growth. So do diet, water acidity and temperature. By regulating its precipitation of calcium crystals, the mantle forms shells that are smooth, ribbed, spiked or whorled. Mantle cells also concentrate pigments from the mollusk's food and secrete those pigments continuously or intermittently, creating colored spots, lines, circles, rays or patches. At maturity a mollusk may flare out its shell's edges, as a conch does, and grow no more.

Humans are not the only shell collectors. Carrier snails secrete calcium carbonate as a fixative for attaching dead shells of other species to their own shells. "Magpies," says Abbott. They come to look like slow-moving shell junk piles. Malacologists say the collecting cannot be solely for camouflage: even species living in the lightless depths do it. One theory is that the add-ons strengthen the carrier's own shell. And the protruding shells may save carriers from sinking into soft muds.

Some human collectors on Sanibel also manage to attach shells to themselves. For instance, they sew shells onto their hats. Tucker Abbott wears a string tie with a univalve clasp. And, like mollusks, Sanibel shell fanciers divide into species. "Lots of shell collectors on the island don't really know that a live animal builds the shells—they just don't understand anything about the life cycles," says Alice Anders, an exemplar of one species, the Ecologically Correct.

Anders, who wears periwinkle earrings, has learned much about lifestyles of the various mollusks from her friend Tucker Abbott. But sometimes they clash. "Tucker loves an argument!" she says, in the soft tones of her native Mississippi. Most recently they disputed Sanibel's new ban on taking live shells, which got them on television's *Good Morning America.* If shells are fewer, blame Gulf pollution and habitat destruction, Abbott told the network interviewer. He proclaimed the ban on taking

Inside Showcase Shells, her Sanibel shop, Bev Deynzer holds a splendid trumpet triton specimen, from Asia.

A horse conch in hand and a lightning whelk in her lap, fervent collector Alice Anders displays her treasures.

Devoted to the pursuit of shell art, glue-gun-wielding crafters create sculptures at Sanibel Community Center.

live mollusks scientifically pointless. But Alice Anders defended the ban, which she had pushed: "I'm doing this to save whatever we have left!"

In her home, hidden away in Sanibel's jungly midsection, Anders produces her evidence. "This is a king's crown," she says, pulling from its shelf a conchlike univalve, bristling with pronglike spikes. "It was not exceptional when I found it in 1981." Her living room is chockablock with bubbling aquariums and Gulf relics. But she manages to find a ruler to measure the king's crown. "Four and a half inches," she says. "Today, if I find one half as big, I think it's huge, so in 14 years they've gotten so much smaller!"

In the early 1970s, Anders had gone shelling in Cuba's Guantanamo Bay with her oldest daughter, who was married to a Navy officer. Afterwards, back home in Baton Rouge, she helped found the Louisiana Malacological Union, a collectors' organization and study group, where she met Tucker Abbott, a guest speaker. In 1980, at age 60, she moved to Sanibel Island.

"Tucker Abbott and his wife—with whom I'd become friends because Tucker judged the Sanibel Shell Show—gave me books," she says. "And the Sanibel Shell Club gave me a scholarship to spend two weeks studying marine life in the Caribbean with the Cousteau Society."

She puzzled her way through scientific papers. "I'd sit with the glossary for the papers on one side and a dictionary on the other side, and translate sentences because scientists do write in a foreign language," she says. She became the leader of Sanibel's beach walks for schoolchildren. She has also taught beach ecology to tourists. "I did this professionally, but the only time I do it now is as a volunteer," she says. "I'm 75 and I'm just doing what makes me happy."

But the Ecologically Correct are only one Sanibel sheller species. As Alice Anders puts it: "You ought to go down to the Sanibel Community Center and visit the glue-gun crowd." Inside a sprawling white building on Periwinkle Way the gray-haired and the scant-haired chatter convivially as they work at long tables, wielding electric glue guns. It looks like a factory where workers assemble light sockets. But then you take in what they are actually making.

Here, for instance, is a no-see-um—a tiny, biting insect—sculpted entirely from Sanibel seashells. Here is somebody's single white rose, made from jingle shells, with a wire stem and plastic leaves. Here is a lily pad with tellin-shell petals. And here is Phyllis Mason, putting the finishing touches on a tap-dancing clown, constructed almost entirely of shells. "I try to get in a little action," she says, New England in her intonations.

The Sanibel-Captiva Shell Club sponsors this weekly workshop at the Community Center. Club members also go on beach patrol, collecting glue-gun fodder. And the club sells the shell creations at Sanibel's annual Shell Fair, held each March. "The Tiffany's of Shell Shows," it is America's oldest, now in its 58th year. It began as a show-and-tell on the earliest hotels' porches.

Shellers all, eyes on the prize

Now about 10,000 visitors crowd the Community Center for the four-day event, cosponsored by the Center and the 400-member Shell Club. About 250 collectors and dealers from around the world enter their rarest or most unusual specimens in 40 separate scientific categories and 48 artistic categories, judged by experts like Tucker Abbott, who has been awarding ribbons off and on here since the 1950s. Some of the proceeds go to the Community Center. The rest help fund exhibits at Abbott's new museum and such projects as Alice Anders' beach walks for kids, the "Junior Conchologists."

And Sanibel has one more sheller species: Serious Conchologists. Malacology has come to be the study of mollusks, while conchology embraces only their shells. Serious Conchologists may prowl Sanibel beaches, especially at dawn after a storm has rolled in potentially interesting deepwater rarities. But they also frequent less-natural habitats, like Showcase Shells on Periwinkle

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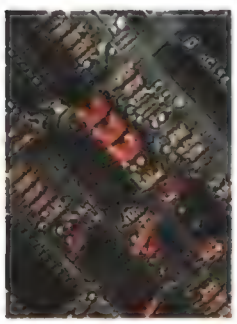

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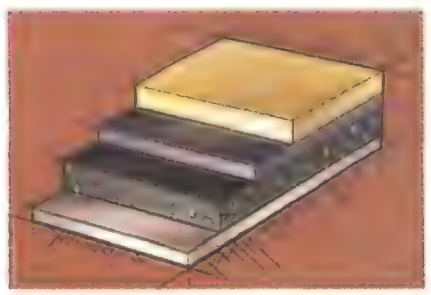

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Exhibiting characteristic "Sanibel Stoop," shellers bend over the sandbars in unending quest for exotic finds.

Way, where Al and Bev Deynzer offer what the local waters may not.

The Deynzers, both from New York City, discovered shells in the Philippines, where Al was a U.S. Air Force communications-electronics officer. Instead of fighting their addiction, the Deynzers just said yes. After Al retired from the Air Force in 1978, they opened their shop on Sanibel, which they say "has more shell shops than most *countries*." At Showcase Shells, you can buy emerald nerites, which look like green thumbtips, at six for a dollar. Or you can buy *Entemnotrochus rumphil*, or Rumphius' Slit Shell, shaped like a top and brought up from deep water off Taiwan by trawlers, for $2,850. While it is the store's costliest shell, it is not in shelldom's stratosphere. "This past year a new species, a kind of cowrie, was selling for $35,000," Deynzer says with a shrug. But nobody need pay that much for beautiful shells. Deynzer points to a selection of scallops, in your choice of lemon, lavender, calico or orange. "They now grow these commercially in Japan," he says.

Like Deynzer, who is partial to collecting exquisitely patterned miter shells, most conchologists specialize. Across a bridge from Sanibel, on adjacent Captiva Island, Codman Hislop, who died shortly after this interview, displayed his shells in glass showcases. At first, the retired American Studies professor's specimens seemed lackluster, all chalky white. But that is because they are millions of years old—fossils. He held up a cowrie that is perhaps 10 million years old. "It came out of the sand just as you see it here," he said, adding that his favorite collecting sites are gravel pits on the mainland. "These left-handed cones, with the opening to the left when you hold them up, were common in the Pleistocene, but there are no living left-handed cones," he said. "Here's one I found in Sarasota, *Ecphora bradleyi*—I was the object of much envy."

Hislop was a founding board member of Sanibel's new shell museum. Tucker Abbott, he told me, was the natural choice as director, the island's unofficial presiding malacologist. Abbott even induced Raymond Burr, the late actor who played TV's Perry Mason and subscribed to a malacology journal Abbott edits, to give the museum cones and cowries he had collected on his personal island in Fiji. Burr wound up co-chairing the museum's fundraising drive.

Oddly, Tucker Abbott—whose life has been an homage to mollusks—does not collect shells, although he lives surrounded by them. The small condo where he stays while working on the museum is so filled with scholarly papers and in-the-works manuscripts about shells and cartons full of shells that he has to clear room to sit. Traversing the living room demands precision walking if you don't want to crunch something priceless.

"We're still setting up the museum, so I have little treasures here, like these from the Russians," he says, pawing through a heap on the couch and producing several test tubes. Inside are tiny shells. "They're from Lake Baikal," he says. "It's so old and so deep that they look like marine shells, because the lake's conditions are oceanlike. And here's a new clam from 98 fathoms off Key West that a guy wants me to describe—about 500 new species of mollusks from around the world get described every year." Also lying among the heaps is a copy of *The Edge Of The Sea*, in which Rachel Carson inscribed: "To Tucker Abbott—in grateful appreciation of his vast and specialized knowledge, so freely shared with others." But Abbott has no shells of his own. It is bad form among malacologists. "You can't collect what you're responsible for—it belongs to the museum," he says.

Taking the long view absorbs Abbott always, as it does today on Algiers Beach, where he has taken a break from creating his new museum. Watching the Gulf of Mexico lap at Sanibel's sand—"Ground-up seashells," he points out—he has forgotten the purple sea whip he picked up, still in his hand. He is contemplating a toddler. The little boy is staring raptly, mouth open, at two royal terns inspecting a Florida fighting conch the waves have washed up. "Yes, he'll remember this," Abbott says, barely audible, speaking only to himself. "He'll remember this, just as I remember that beach on Cape Cod."

Mounds of "beach mix," assorted shells deposited at high tide, quicken the pulse of seekers young and old.

By James Trefil

Ah, but there may have *been* life on Mars

If bacterial life did arise on an Earth-like early Mars, we should be able to find its fossil remains preserved in those red rocks

Arrow indicates the area where the first NASA spacecraft since Viking will land. Note polar caps.

About two years from now a no-frills spacecraft called *Mars Pathfinder* will enter the red planet's atmosphere and parachute a large instrument package toward the surface. Air bags will inflate all around the package, and when it is just 100 feet above the ground, the parachute will release it. If all goes according to plan, the instrument package will bounce: possibly as high as a ten-story building, probably more than once. Then it will settle to the surface, the sides will open like the petals of a flower, a sun-powered vehicle will drive out—and surface exploration of our planetary neighbor will have resumed. One of *Pathfinder*'s missions will be to lay the groundwork for future efforts to find the fossil remains of living things.

Wait. Didn't the Viking landers 20 years ago fail to find conclusive evidence of life on Mars?

Well, yes, and most scientists today believe that Mars is barren of life. But that doesn't mean that there was never life there. And if life was there once, there's always a chance that we'll be able to find traces of it.

Mars has always captured the human imagination. There is its redness. We know now that the color comes from chemical reactions that long ago locked up Mars' oxygen in reddish minerals on its surface, the "rusting" of the planet. To the ancients, the red color meant only one thing: blood. From the earliest times, Mars—named for the Roman god of war—has been associated with bloodshed. Even the astronomical symbol for Mars, a circle with an arrow pointing out at 2 o'clock, is supposed to represent a shield and a spear.

As astronomers acquired telescopes, Mars mythology only grew. Humans have a tendency to interpret random images in ways that tell you more about the person doing the interpreting than about the images (think of the Rorschach, or "inkblot," test). Looking at fuzzy images of Mars through early telescopes, astronomers interpreted what they saw in terms of what they knew, and the legend of Mars as a place not unlike Earth—a planet brimming with life—began to grow. By the end of the 18th century, the Anglo-German astronomer William Herschel saw the Martian polar caps, measured the length of the Martian day (it's about 24½ hours) and argued that dark spots on the Martian surface were oceans. His conclusion: Martians "enjoy a situation in many respects similar to our own."

It was the Italian astronomer Giovanni Schiaparelli who, in 1877, produced the most lasting bit of Martian folklore. He saw what he took to be long, thin, unnaturally straight lines on the Martian surface. He called them *canali*, a word that can translate into English either as "channels" or "canals." Unfortunately, the latter translation was used, and the canals of Mars were born. Obviously if there were canals, there had to be canal builders, so once more Mars was peopled with all manner of intelligent life-forms.

Swathed in air bags, *Pathfinder* will bounce hard off the Martian surface as parachute and tether jet away.

After the cushioned payload (left) lands on the planet, the air bags will collapse and *Pathfinder*'s sides will open like a flower (right). Meanwhile the parachute, now safely out of the way, sinks toward the surface.

The man who took the canals to their limit was the American astronomer Percival Lowell, scion of the old Boston family (*Phenomena*, January 1988). Intrigued by Schiaparelli's findings, in 1894 he built a private observatory in Flagstaff, Arizona, and commenced a decades-long series of observations. In his 1908 book *Mars as the Abode of Life*, he recorded no fewer than 184 canals.

Throughout the first half of this century, Mars was populated in the popular imagination with all sorts of sentient beings. In his series of novels set on Mars, Edgar Rice Burroughs (creator of "Tarzan") told of bizarre Martian creatures and trees a hundred feet in diameter with "stems and branches and twigs [that] were as smooth and highly polished as the newest of American-made pianos." C. S. Lewis, the shy Cambridge don perhaps best known for the *Chronicles of Narnia*, also wrote about incredible Martian plant life: "The purple mass looked for a moment like a plump of organ pipes, then a stack of rolls of cloth set up on end, then like a forest of gigantic umbrellas blown inside out. It was in faint motion. . . . The purple stuff was vegetation. . . ."

In 1938 Mars was the subject of perhaps the most famous radio broadcast in history. Directed by Orson Welles, the show began with music, only to be interrupted by a news flash from the "Mount Jennings Observatory in Chicago" that began the chronicle of a Martian invasion of New Jersey. *The War of the Worlds* touched off real panic. Police switchboards lit up, and people jammed the highways to escape the Martians. Disclaimers on the show seemed to have no effect. The huge impact of *The War of the Worlds* (the radio play was adapted from the book by H. G. Wells) touched off a long series of stories, movies and TV shows based on invasions from Mars. Despite all the fun, there really was no evidence for life on Mars. Lowell apparently had seen what he wanted to see. It is true that the human mind, confronted with a more or less linear series of poorly seen dots, will often connect them into a line. That may be what happened to Lowell. No one else saw canals.

As late as the 1960s reputable astronomers saw what they thought were changes in vegetation on Mars. Each polar cap in turn shrinks when spring comes to that hemisphere. At the same time, a darkening visible to all

The volcano Olympus Mons, rising 82,500 feet, offers mute testimony to heat in the planet's interior.

Pathfinder opens for business. The 25-pound rover will drive to rocks and analyze their composition.

spreads from the shrinking cap toward the equator. They reasoned that water from the melting caps was irrigating desertlike vegetation, bringing it to life. (The darkening turned out to be the work of dust storms.)

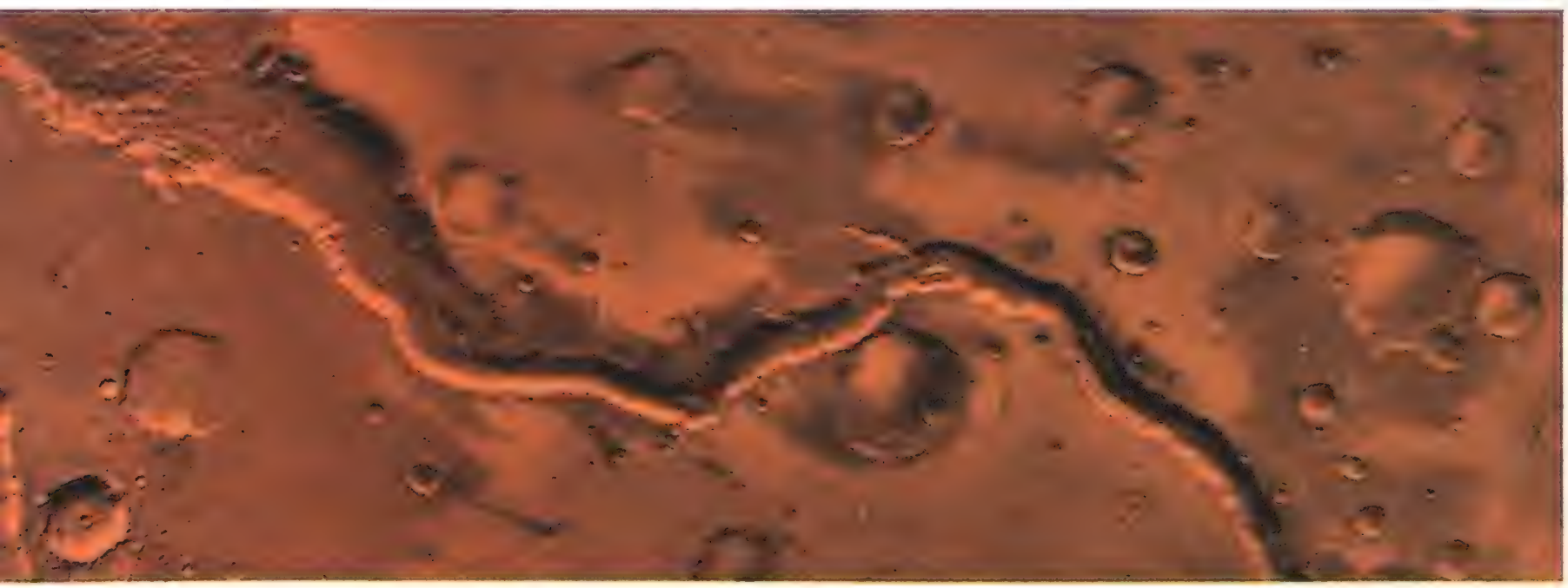
Still being touted as proof of ancient civilizations on Mars is "The Face," a rocky outcrop that looks remarkably like a human face when illuminated from the side. That image briefly starred in supermarket tabloids.

In 1965 *Mariner 4* sent back our first close-up pictures of the Martian surface. Not only were there no canals, but *Mariner 4* and the spacecraft that followed revealed a planet that was largely cratered, apparently lifeless desert. We have subsequently learned that Mars is home to Olympus Mons, the largest volcano in the entire Solar System, and to a canyon system stretching for almost 3,000 miles around the Martian equator. The atmosphere is extremely thin (equivalent to that at 130,000 feet above Earth) and made up almost entirely of carbon dioxide. The surface is cold, almost never getting above freezing even at the summertime equator.

Perhaps the greatest surprise were the photographs from *Mariner 9* in 1971-72 that showed channels on the surface. Now these were not Schiaparelli's *canali*—there's no way these channels could be seen by even the most powerful earthbound telescope. They are unmistakable watercourses, however. There is no water in them now, but they trace out the path of water that flowed in the past. They resemble the arroyos of the American West, through which water from infrequent cloudbursts flows, but which are bone-dry most of the time. Water once ran on the surface of Mars.

In July 1976 a Viking spacecraft landed on Mars. No one who sees those first photographs is likely to forget them. A reddish plain, littered with dark rocks, stretches into the distance, while a pale pink sky arcs overhead. Three Viking experiments tested for the presence of life on the surface in different ways. They gave what most scientists now take to be inconclusive results. (Viking orbiters, which photographed the entire planet, were our last source of images. The billion-dollar *Mars Observer* fell silent when it was about to enter orbit around the red planet in 1993. A Russian spacecraft, which will drop two small scientific stations onto the surface, is now scheduled to arrive at about the same time as *Pathfinder.*)

With what we know now about the inner planets and



Shalbatana Vallis is the channel near the landing site through which water ran most recently. Flow was from top left to bottom right, transporting rock debris that *Pathfinder*'s rover might encounter.

Color patterns around a hot spring in Yellowstone National Park are bacteria being entombed in minerals.

the origin of life on Earth, the Viking results are no surprise. Heat generated by incoming space debris produced volcanoes, and atmospheres formed. What happened next depended on two things: the planet's mass and its distance from the Sun. Less-massive planets like Mercury didn't have enough gravity to hold on to their atmospheres, so the molecules escaped into space. More-massive planets, Earth and Venus, held on to their atmospheres. In this scheme, Mars is in the middle. With about one-tenth the mass of Earth, Mars would have held on to its atmosphere longer than the Moon and Mercury. In its early days it probably had a lot more atmosphere than it does now, and more water. Furthermore, it could easily have been warmer than it is now—just how warm remains a subject of debate. So the early Mars might have been like the early Earth—warm and wet.

On the early Earth, life arose very quickly once the bombardment of space debris slowed (SMITHSONIAN, February 1995). Within about 500 million years, flourishing ecosystems of bacteria had developed. Furthermore, they left their traces in rocks for us to read. Why couldn't life have developed similarly on Mars, left its mark in rocks, and then become extinct?

But how do you even start to think about hunting fossils on a world no human has ever walked? You look at Viking images to find places where water might have been and geological conditions were right for capturing a fossil record. Then you look for places on Earth that approximate the same conditions today. By studying these "Mars analogue" sites, scientists hope to understand not only how Martian fossils might have formed from living things billions of years ago, but how we might go about finding them.

The channels themselves provide clues to what weather was like on the early Mars. When it rains on Earth, there is a characteristic pattern of runoff. Small rivulets come together to form streams, which come together to make larger streams, and so on until all of the water enters a large river. Whenever you see this pattern, you can be sure that it is a result of water falling from the sky. In a few places on Mars the channels form such patterns, but most of the channels seem to be long single courses, with perhaps a few tributaries. Such patterns on Earth arise primarily in what are called sapping valleys—places where water wells up out of the ground instead of falling from the sky.

There probably was not much rain on Mars. In the early days, however, the planet was still hot. This heat produced thermal springs and upwellings whose traces we see in the channels today.

Headquarters for the quest for Mars analogues is the office of Jack Farmer at NASA's Ames Research Center, south of San Francisco. The landing site for *Mars Pathfinder* is going to be the mouth of an old flood channel called Ares Vallis, located about 15 degrees north of the

Fairy-tale towers of tufa in Mono Lake, California, are calcium deposits that first formed underwater. Bacteria were trapped in the process. Water diverted for Los Angeles lowered the lake, exposing the tufa.

Martian equator. There are lots of technical reasons for this choice, but there is another: Farmer and his colleagues have designated the Ares Vallis site as one "of biological interest." Farmer explains why to a visitor.

Pulling a Martian globe off a filing cabinet, he points to the landing site. "The large outflows that formed the channels originate in what we call thermokarst features," he says. This is a landform found in places like Iceland on Earth, where heat under the ground melts the permafrost, causing the ground to collapse and liquid water to gush out over the surface. At Ares Vallis scientists believe they can see evidence for episodes of catastrophic flooding—events like those that created the scablands in eastern Washington (SMITHSONIAN, April 1995). "The floods that carved the Ares Vallis also transported huge amounts of sediment," Farmer points out, "so the *Pathfinder* landing site should have a grab bag of geological goodies."

"Where there is heat and water," he goes on, "there would likely be hot springs. Hot springs are places where microbial organisms grow, as we can see at places like Yellowstone National Park today." He pulls out photographs of the Grand Prismatic Spring there—a gorgeous display of concentric colored rings. "Those colored rings are bacterial mats," he explains. "The minerals are being deposited so fast that they entomb whatever bacteria are around while they are still alive."

Mars is the next step for James Trefil, the Clarence Robinson Professor of Physics at George Mason University, who discussed life on Earth in February.

The idea, then, is that if living things developed in early Martian hot springs, they would have been entrapped by minerals. During floods at Ares Vallis, some of those minerals would have been washed down to the landing site, carrying traces of life with them.

Farmer's lab works on the problem of detecting past life in mineral deposits. At places like Yellowstone, they can watch the process of mineralization taking place. They also look at places that once were hot springs—for example, a 350-million-year-old site in Australia. In all cases, when they slice the rock and look at it under a microscope, they see fossilized bacteria.

Hot springs aren't the only places where bacteria can get trapped, however; anyplace where rapid mineralization is going on will do. At Mono Lake in California, for example, underground springs feed calcium-laden groundwater into the lake, and calcium carbonate precipitates out of the water, forming weird, unearthly towers. The formation of these rocks, called "tufa," takes place so rapidly that bacteria get trapped.

So will *Mars Pathfinder* locate fossils for us? Farmer

laughs. "Probably not, unless the evidence for life in the rocks is visible to the naked eye. Otherwise, we'll have to wait until we can return samples from Mars to study in our labs, maybe about 2010. What *Pathfinder* will now do is analyze the minerals at the site. This will help us decide whether they could contain fossils."

The real test will come when we bring those minerals back. And then what? Why should we expend this sort of scientific effort (not to mention mountains of dollars) to find out if some single-cell bacteria lived billions of years ago on another planet?

For many people, the question of life on Mars has so much intrinsic interest that the project scarcely needs to be defended. Social commentators have talked about the need for a nation to have a dream—to be able to set worthy goals to fire the imaginations of its children. Economists might talk about the spin-offs that supposedly always follow investments in new technology: new products, new jobs, new ways of doing things. But the search for evidence of past life on our neighboring planet has a special importance for biology itself.

In most branches of science we have the results of many experiments and processes to guide our thinking. We know a lot about Earth, for example, because we can see it in context as one of a series of planets. We know what about it is common to all planets, what is special and unusual. But when we talk about living things, we have no such context. Every living thing on Earth, from a blade of grass to a blue whale, is the result of a single experiment in life, the descendant of a single cell that developed four billion years ago. We can't put the result of this experiment in context because we don't know about any other living things.

Looked at this way, *any* evidence for life on Mars, even if it's now extinct, could be valuable. Does life really develop as easily and quickly as the terrestrial evidence suggests, or was Earth a fluke? Does life have to be based on cells regulated by DNA? Answers to questions like these require the results of more than one experiment, and at the moment Mars is our best (perhaps only) chance to get that kind of information.

Would finding the sorts of fossils we have on Earth really answer these sorts of deep questions? This question came up at a beer party for paleontologists at the Department of Geophysical Sciences at the University of Chicago. The group included everybody from senior professors to first-year graduate students, and as the evening wore on and the supplies of beer dwindled, the discussion got more and more speculative.

OK, someone said, assume that fossils are found. Does that really guarantee an answer to any of the deep biological questions? Not necessarily. Jack Sepkoski, who put together the first computerized data base of Earth's fossil record, noted that some theorists believe that the

Early Mars may also have had hot springs with the colorful bands in which bacteria were being fossilized.

first organic molecules on Earth arrived on meteorites, and that comets and meteorites seem to be loaded with precursors of life. "If the same kinds of meteorites fell on Earth and Mars, and if the two really had similar climates, would it be surprising if the same thing happened in both places?" he asked.

"Besides," chimed in Mike LaBarbera, who has studied the effects of organism size and shape on evolution, "we know that there are meteorites on Earth's surface that came from Mars. [Presumably they have also gone the other way.] How could you prove that life on Mars didn't start on Earth in the first place?"

That remark touched off a spirited discussion about the possibility of interplanetary fertilization. What if life actually started on Mars and was brought to Earth? What if life started on Earth, was transferred to Mars, was eradicated on Earth by a large meteorite impact, then started all over again later? In this case, Mars would be a "museum" of life whose traces have long since vanished from our planet. What if—here the group was really stretching—life started on Earth, went to Mars, was extinguished on Earth, and then was transferred back to Earth before becoming extinct on Mars? Someone called this the "Ping-Pong-ball theory."

The next question: Would we really be able to tell anything about the chemistry of Martian life-forms? The consensus seemed to be that there wasn't much hope of finding intact DNA or other complex molecules after all this time. Mairi Best, a graduate student, talked about finding other kinds of chemical footprints of life on Mars, as we can on Earth. Mike Foote, a rising faculty star, wondered whether finding the fossils of bacteria would tell us anything about the way Martian life worked. "Unless we find something radically different from what we see on Earth," he pointed out, "it's hard to see what kind of conclusions we'll be able to draw. The best outcome would be for the Martian fossils to be something totally unexpected."

"I doubt we'd find anything like that," LaBarbera came back. His reasoning: single-cell organisms on Earth acquire energy by allowing molecules from the environment to diffuse through their outer membranes, and they get rid of wastes by the reverse process. "It seems to me that you're going to find spheres and cylinders no matter where you go—it's simple physics."

For a while the conversation centered around the question of whether life that developed elsewhere in the Universe would have to resemble life on Earth, at least for single-cell organisms. Prof. Dave Jablonski may have summed it up best:

"It's easy to take things that seem obvious to us and apply them to life in other places," he said, "but I wonder whether our imaginations are really good enough to anticipate what we'll find when we actually go there."

The really big art of Claes Oldenburg

By turning the ordinary flashlight, spoon or clothespin into a colossal monument, this artist chisels away at society's solemnity

Art is a funny thing. It can be at once obvious, obscure, beautiful and bizarre. But in the hands of Pop artist Claes Oldenburg, master of small things made bigger and hard things made softer, it can also be hilarious.

Was Oldenburg looking for laughs back in 1967 when he drew up plans to replace Chicago's Navy Pier with a spoon? Probably not. He's no comedian: "My single-minded aim is to give existence to fantasy," he has said. But never mind; it's pure delight to come upon his humongous spoon in the Minneapolis Sculpture Garden. The 51-foot-long utensil cradles a 1,200-pound maraschino cherry that sprays a cascade of water from its stem.

Since 1976, Oldenburg and his wife, art historian and artist Coosje van Bruggen, have conspired to bring really big sculptures of really ordinary things to public places. Their new book, *Large-Scale Projects* (Monacelli Press), celebrates their collaborative efforts with an extraordinary collection of images, including the ones shown here. Oldenburg has also produced dozens of drawings of what he calls his "non-feasible" sculptures; a selection of these and other works is now on view at the Museum of Contemporary Art in Los Angeles.

One sculpture he actually built is the 38-foot-tall *Flashlight* (right), which rises over the campus of the University of Nevada in Las Vegas. It caused quite a stir in 1981 on its cross-country trip from the Connecticut foundry where it was made. Truck driver "Red" Morgan constantly fielded the same basic question on his CB radio from fellow drivers: "What the devil are you hauling?"

But for many Oldenburg fans, the question remains: Will he ever find a way to plunk down that huge melting Good Humor bar into the middle of New York's Park Avenue? Back in 1968 radical philosopher Herbert Marcuse predicted such a sculpture might bring on the revolution because, as he said, "then people cannot take anything seriously; neither their President, nor the Cabinet, nor the corporation executives." So far none of Oldenburg's sculptures have brought down the social order, but they have certainly given us all a lift.

Beth Py-Lieberman

The 74,000-pound *Flashlight* stands beam-end down on the University of Nevada campus. *Spoonbridge and Cherry* (opposite) spans a reflecting pool in Minneapolis.

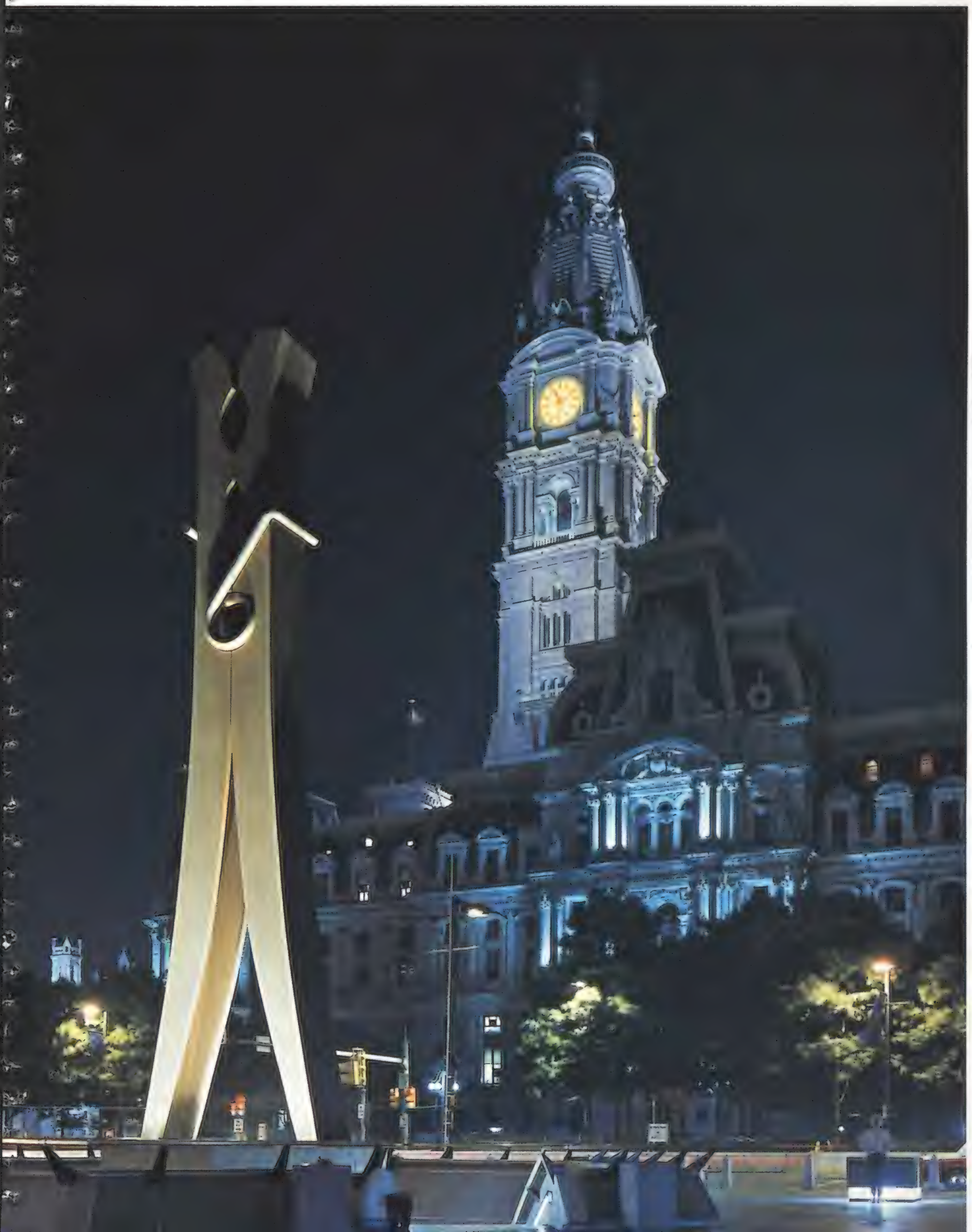
Photographs by Attilio Maranzano

In a small park in the heart of Cleveland rests the 28-foot-tall *Free Stamp*, which was inaugurated on November 15, 1991, with a free lunch.

The blue blaze on the 68-foot-high *Mistos (Match Cover)*, a work built for the 1992 Summer Olympics in Barcelona, Spain, is a reference to the Olympic Torch.

At the Kröller-Müller Museum in the Netherlands, the 41-foot-tall *Trowel 1* (1976) looks as if it were left behind by an enormous Dutch gardener.

Towering over a subway exit, the 45-foot-tall *Clothespin* (1976) is a familiar Philadelphia landmark that anchors the plaza in front of City Hall.



By Bil Gilbert

America's only king made Beaver Island his Promised Land

When James Strang had himself crowned the ruler of an archipelago in Lake Michigan, he claimed he was selected for the job by God

In an 1856 daguerreotype, polygamist Strang looked more like a mild-mannered country preacher.

Despite the initial difficulties with George III of England, Americans have long been in the habit of honoring impressive fellow republicans by calling them "kings" and "princes" of this and that—the wild frontier, rock'n'roll, the bond market and so on. Crowning "queens" and "princesses" of beauty contests, harvest balls, homecoming games and such is also a well-established national industry. But when it comes to real monarchs who are sovereign over a given territory and its inhabitants, this country has had only one. James Strang was an almost pathologically ambitious individual who, surrounded by cheering subjects at St. James, his capital on the Beaver Archipelago of Michigan, had himself crowned King James on July 8, 1850.

Strang's domain was somewhat smaller than Rhode Island and contained only about 2,500 people, but there have been and still are smaller, legitimate principalities. As has been the case with many another potentate, King James' reign was rather short and ended with his assassination. While he ruled, however, he did so in the old-fashioned way: by divine right as the ultimate lawgiver, political authority, arbiter of manners and morals for his people. Why he wanted the job, and how he got and handled it, makes for quite a story.

Born in 1813, Strang grew up on a farm in southwestern New York as a ferociously articulate, often broody youth who was an omnivorous reader of fairly heavy, uplifting literature. At 18 he was a rural schoolteacher, and being, as he reckoned, "perfectly at home in publick speaking," acquired a formidable reputation as an orator and debater at local gatherings. Five years later he was a practicing attorney, real estate speculator and newspaper editor. But his long-term goals were much grander. "My mind has always been filled with dreams of royalty and power," he confided to his diary. "I have spent the day in trying to contrive some plan of obtaining in marriage the heir to the English Crown."

Strang gave up the notion of marrying young Victoria but confessed, "the dreams of empire are so thoroughly imprinted on my mind as not to be easily erased." On his 19th birthday he berated himself for having been so slow to achieve such dreams. "I ought to have been a member of the Assembly or a Brigadier General before this time if I am ever to rival Caesar or Napoleon which I have sworn to."

By his own admission, Strang, since his 15th year, had been a notably energetic womanizer, but at 23 he abruptly stopped tomcatting and married the sister of his best friend, Benjamin Perce. He wrote that he was most attracted to Mary Perce because of her great "moral and intellectual worth." During the next decade she bore him four children.

In 1843 James and Mary Strang immigrated to southern Wisconsin. They settled near Burlington, where he commenced practicing law. A number of residents of the

Decreeing that he had a mandate from heaven, Strang reigned over an empire rich with nature's bounty.

Robert Lo Grippo

area had converted to Mormonism. There is no direct testimony as to Strang's first impressions of his new neighbors. His grandson and biographer, Mark Strang, made the plausible guess that upon observing those earnest, zealous people, his grandfather "like a prospector who has finally struck it rich knew that he had found his El Dorado, a listening audience."

Strang had earlier declared himself "the perfect atheist," but in short order he struck up an acquaintanceship with Mormon leader Joseph Smith in Illinois, becoming a convert and a church elder. Not long after Smith was murdered by a gentile mob in 1844, Strang laid claim to being his rightful successor. Brigham Young soon took control of the Church of Jesus Christ of Latter-day Saints, but Strang, undaunted by naysayers, began evangelizing with considerable success in the Midwest and the East.

By September 1845 some 400 true believers had gathered in southern Wisconsin where Strang, at the behest of a divine messenger, unearthed three ancient-appearing brass plates that foretold the coming of Joseph Smith and then himself as leaders of God's chosen people. Later, at a never specified time and place, he received 18 more such plates, the contents of which were eventually published as part of the Book of the Law of the Lord, the work that would serve Strangites as revealed scripture.

Disciples naturally accepted the miraculously found plates as being exactly what Strang said they were. Others thought they were humbug, a view that was gently advanced by Hazel McCardell, one of Strang's granddaughters. She wrote to another biographer, Doyle Fitzpatrick, that she once asked her grandmother if Strang had been a smart and well-educated man. "She [the grandmother] replied with some impatience: 'Of course your grandpa was smart and well-educated; otherwise how could he have written those plates?'"

In 1846, while proselytizing in Pennsylvania, Strang received a vision of "a land amidst wide waters and covered with large timber with a deep broad bay on one side of it." Here, he was advised, "shall God establish his people."

Having seen it from shipboard only weeks earlier while traveling eastward from Wisconsin, Strang knew at once that the appointed location was the Beaver Archipelago, a complex of islands in northern Lake Michigan. The next spring he made an exploratory trip to Beaver Island, also known as Big Beaver, which, with 37,000 acres, was the largest in the chain. Inspection verified his vision. Big Beaver was covered with virgin stands of hardwood and pines, set with small lakes, cut by streams. Otherwise the interior was level and, when cleared, tillable. At the north end was a deep, sheltered harbor regarded by sailors as one of the best in the Great Lakes. Offshore were exceptionally productive fishing waters. On such an island, lying 25 miles off the mainland, it would be possible to protect God's people from unsettling outside influences and ideas.

By 1849 more than 250 Strangites had settled on Big Beaver, where they established the village of St. James on the harbor. That summer their numbers were increased as other Strangites from Wisconsin and elsewhere gathered on the island for a conference.

Strang "colonized" six counties (light green) and the Beaver Archipelago.

Among the newcomers was a family from southern Michigan, Reuben and Eliza Field and their daughter, Elvira, an 18-year-old schoolteacher who was a considerable beauty.

Strang had converted the Fields the previous year and immediately thereafter experienced a vision. In it he was told that God wanted him to be crowned as a temporal king on Beaver Island. He was also informed that God expected him to serve as a role model for his subjects by taking as many additional wives as he could support.

Initially Strang mentioned this revelation only to his second in command, George Adams. Adams was an itinerant Shakespearean actor, a spellbinding orator and a freelance evangelist. He became Strang's closest adviser after he was excommunicated by Brigham Young for adultery.

Strang sent Adams to visit Elvira Field. Adams told her that Strang would soon become a polygamous king and wanted Elvira to be his wife and queen. But until it was politic for Strang to publicly announce his intentions, Adams warned, Elvira must keep them secret, even from her family. For whatever reasons, she accepted the proposal. She and Strang were married, very secretly, by George Adams during the conference on Beaver Island that summer.

The couple immediately left on a long eastern trip during which, with her hair cropped and wearing broadcloth suits, Elvira was introduced as "Charles Douglass," Strang's nephew and new private secretary. Despite considerable speculation about young Douglass' "physiological peculiarities," Strang waited a year before acknowledging that he had become a practicing polygamist. Some defections followed—Mary Perce Strang and her children left the area—but generally the announcement caused little controversy.

When Strang announced, early in the summer of 1850, that he had been divinely directed to become a king, there were few objections. George

As was true of most cabins built by Strang's Mormon subjects, this dwelling near the harbor on Beaver Island was fashioned mainly of squared-off logs.

Adams was put in charge of arrangements for the coronation. Making use of his theatrical experience and a kit of props, he converted the recently completed log tabernacle at St. James into something resembling a set for a production of *Richard III*. On the morning of the great event, the tabernacle was filled with 400 invited celebrants. Strang then entered wearing a red, nightshirt-like robe decorated with strips of white flannel to simulate ermine. He seated himself on a raised throne—actually, a chair frame padded with moss. Adams placed a gilded metal-and-paper crown on Strang's head. Strang tapped the kneeling Adams with the "Scepter of Judah," a length of hardwood post, elevating him to the rank of prime minister. Then the royal standard, a flag emblazoned with a kingly figure brandishing a cross and trumpet, was unfurled. With Adams acting as the cheerleader, the crowd shouted, "Long live James, King of Zion!"

Only four months after he crowned Strang, George Adams was excommunicated for what in his case were the usual reasons: hanky-panky involving women, whiskey and money.

When Strang first arrived on Beaver Island, it was already occupied by a settlement of fishermen, traders and their families. Most of them lived on the aptly named Whiskey Point, along the north shore of Big Beaver's harbor. A few of the first Strangite settlers purchased properties from those owners, but most others began taking land by squatter's right without regard for federal or private titles. Their future intentions became clear when, soon after his coronation, Strang published at the royal press in St. James the Book of the Law of the Lord. The first two verses in its 26th chapter dealt very specifically with divine real estate law: "1. I have appointed the islands of the great lakes for the gathering of the saints, saith the Lord God. I have given the islands to them. . . . 2. And I have appointed my servant James to apportion unto every one of his portion for a perpetual inheritance."

Their gentile neighbors, who were predominantly Irish-Catholic, came to despise the Strangites as both arrogant land thieves and blasphemous infidels. Relations between the two groups turned violent. Taunts and threats escalated into beatings and gunplay.

Bil Gilbert, who wrote about the Oregon Trail in May 1994, has been enjoying Beaver Island for more than 45 years.

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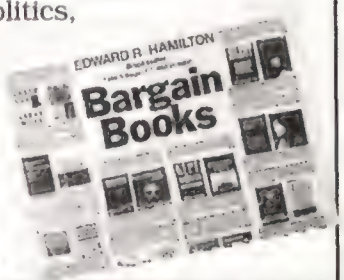

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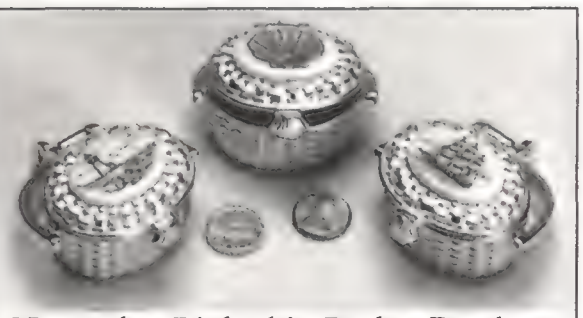

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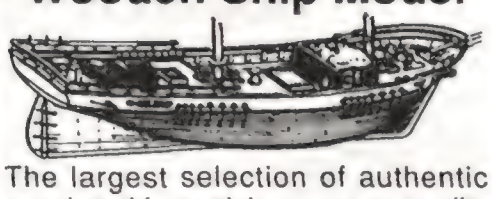

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Mannish figure is purportedly Strang's second wife, Elvira, disguised as an aide.

Buildings were burned, livestock rustled and fishing nets slashed. Eventually there was a killing for which each side blamed the other. There was also a steady exodus of the increasingly outnumbered and intimidated gentiles from the island.

The refugees carried tales of Strangite atrocities and debaucheries. By 1851 stories about the sexy king of Beaver Island had reached Washington, D.C., and President Millard Fillmore decided to intervene. He ordered a company of marshals to proceed to Beaver Island on the USS *Michigan*, the Navy's first iron-hulled warship. When Strang was arrested, he went aboard the ship without resistance but got off a nicely aimed parting shot, saying he thought he was the first foreign potentate the United States had honored by "bringing him into the country on a national vessel."

Strang was taken to Detroit to stand trial in a federal court. Initially he and some 30 of his followers were accused of everything from murder and treason to general moral turpitude. However, a grand jury finally charged them only with counterfeiting, obstructing the U.S. mails, trespassing and cutting timber on federal land. The trial lasted a month and ended with the Strangites being declared innocent on all counts, largely because some key testimony was discredited.

After that complete legal victory, Strang effectively detached his kingdom from the United States. State and federal statutes were superseded by the Book of the Law of the Lord, supplemented by occasional royal edicts. There was, however, one area in which the king insisted that his subjects continue to make use of what amounted to their dual citizenship. That was the electoral process. Beaver Island was by then the most populous community in northern Michigan, with some 600 residents. Strang was quick to see and exploit the political possibilities of the situation. Only a day before the general election in 1852, he announced his candidacy for state representative. Carrying Beaver Island in a vote of 165 to 0, he won easily; the other 200 votes cast in that canvass were split between three mainland candidates.

As to why a king sought such a plebeian office in a foreign parliament, Strang wrote the following explanation to his brother David after his election: "Frankly, I intend to rule all of this country." The country he had in mind was his newly won legislative district, which included some 11 million acres and represented about a quarter of the total area of Michigan.

At the state capital in Lansing, Strang quickly made his mark as a very effective legislative deal maker. He focused his energies on loosening the control politicians on Mackinac Island had traditionally exercised over all of northern Michigan. As a first step, the mainland area opposite Beaver Island was detached from Mackinac and reorganized as Emmet County. Thereupon a Strangite sheriff and posse entered the new jurisdiction and, after an exchange of gunfire, expelled gentiles who had settled at Pine River (Charlevoix today). They were replaced by emigrants from Beaver Island. During the next several years, other Strangite colonies were established in what are now the counties of Antrim, Grand Traverse, Leelanau in

lower Michigan and Chippewa County in the Upper Peninsula.

In 1854 Strang was returned to the legislature, carrying his stronghold by a 695-to-0 count. An opponent challenged the result on the reasonable grounds that there were only 662 registered voters. However, an election board composed of Strang and three of his counselors convened at St. James and certified that the tally was accurate. The same pattern prevailed in gubernatorial, Congressional and Presidential races. With Michigan being a key swing state, and the national electorate badly fragmented, federal as well as local officeholders were understandably loathe to antagonize this formidable backcountry political boss. Among them there appears to have been a tacit consensus that if the man wanted to be King of the North Woods, let him be.

While occupied with foreign (so to speak) relations, Strang and his agents continued to proselytize throughout the country, recruiting new subjects for the kingdom. The state census of 1854 credited the Beaver Archipelago with 2,608 permanent residents, making it by far the largest community in northern Michigan. It was also the most prosperous. The industrious, aggressive Strangites drove gentiles off nearby fishing waters. St. James replaced Mackinac as a principal refueling stop for steamers, which typically burned 150 cords of wood during a Chicago-to-Buffalo run. The annual value of the kingdom's exports—mostly wood, fish and potatoes—to cities around the Great Lakes was estimated by Strang at $325,000, a significant sum in those days.

The flourishing economy attracted more immigrants to the island, which offered well-paying jobs and cheap land. Farmers paid a tithe—in effect a 10 percent down payment—and were then given certificates of inheritance that entitled them to upwards of 160 acres. Strang feared, however, that rural isolation might lead people to shirk their religious and civic duties. Therefore all of his subjects were required to build their homes in St. James or one of three other villages on the island.

If it wasn't exactly a castle fit for a king, Strang's house in St. James was fancier than most on Beaver Island. He and four of his wives lived in it.

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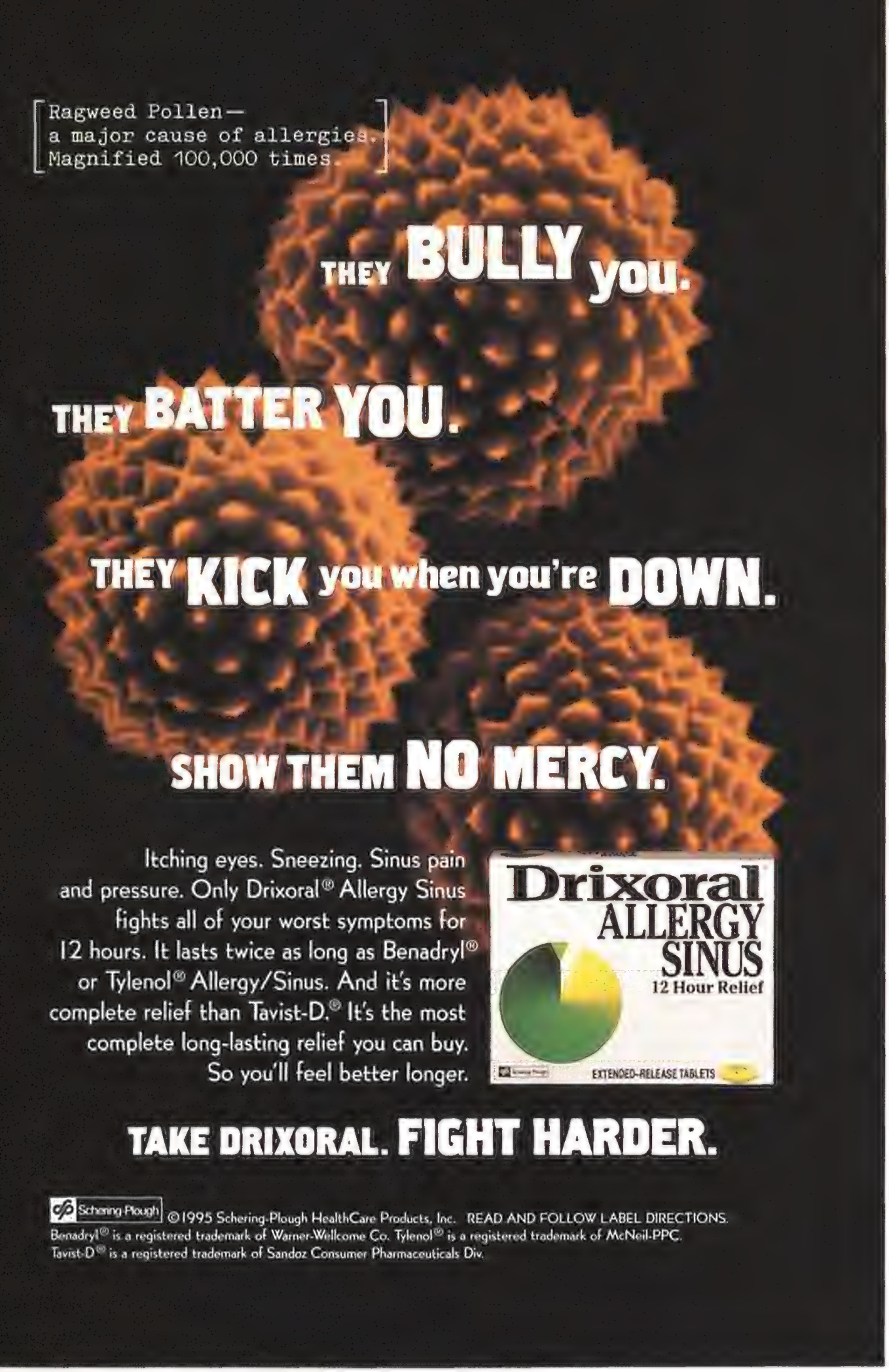
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Those settlements were connected by a network of excellent, for the time, roads. The main one was (and still is) called the King's Highway. To prevent erosion and maintain windbreaks, loggers were prohibited from cutting trees along thoroughfares, streams and lakes, as well as on hillsides and in designated public recreation areas. After timbering an area, they were required to replant it with seedling trees.

Socially, too, Strang was ahead of his time. His church welcomed African-Americans and Native Americans, and women could serve as ministers. But although he was in some ways enlightened and progressive, Strang was always an absolute autocrat who regulated every aspect of his people's lives, from their domestic relations and economic activities down to how they celebrated holidays. Ultimately his inclination to micromanage his subjects proved his undoing.

On the grounds that it was impractical and unhealthy, Strang became exercised by the clothing then customary for women. In 1853 he decreed that his female subjects should dress in loose, knee-length smocks worn over modest pantaloons similar to those that were later popularized by Amelia Bloomer, an early New York feminist. The majority of the Beaver Island women accepted the new costume, but a few were outraged and refused to comply, among them a Mrs. Thomas Bedford. Her husband already had a reputation as a stiff-necked complainer. When he could not or did not make his wife obey the new dress code, Bedford was found guilty of "endeavoring to incite to mischief and crime" and given 39 lashes with a willow whip.

After that beating, the sore and furious Bedford began to conspire with Alexander Wentworth, whose wife was another fashion rebel. Egged on by two other dissidents, Bedford and Wentworth armed themselves, and on June 16, 1856, they ambushed Strang. Firing from behind a woodpile on the St. James wharf, they shot at him three

Looking sorrowful, Strang's fourth wife, Sarah, holds son James in a portrait.

times. After pistol-whipping the fallen man, they fled on the USS *Michigan* to Mackinac. Horribly wounded and partially paralyzed, Strang was taken to the home of his parents, who had moved to Wisconsin but never did join his church, remaining staunch Baptists. Their 44-year-old son, the king, died the day after the sixth anniversary of his coronation.

At Mackinac, Bedford and Wentworth were brought before a justice of the peace. Following a brief hearing, they were each fined $1.25 for court costs, released and then celebrated as public heroes. Shortly thereafter, some 75 armed vigilantes, fortified with strong spirits, sailed to Beaver Island. Some of its residents had already left, but those who remained were stripped of their possessions by the Mackinac bravos and then herded onto ships without regard for their destinations. During the next several weeks, hundreds of destitute Strangites were deposited haphazardly on the docks of Chicago, Detroit, Racine and Green Bay.

Why did they submit so meekly? The only plausible answer seems to be that up until then, all of their decisions had been made by Strang, who had not

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named a successor or provided for the selection of one. Without him, his flock was incapable of collectively taking determined action.

Most of the refugees quietly reentered the general population and joined other churches, but a few and their descendants kept the faith. There are now about 350 practicing Strangites scattered about the country in at least six independent groups. They are united by their belief in the authenticity of the Book of the Law of the Lord and the conviction that a second prophet will come among them.

After the Strangites were expelled, Beaver Island was occupied almost exclusively by emigrants from northern Ireland, drawn to the place because of its similarity to their native Aran Island in County Donegal. Until the 1930s Gaelic was commonly spoken on the island, and nearly all who lived there were dependent on commercial fishing. For a variety of environmental reasons, that work all but disappeared after World War II, and the year-round population of Big Beaver dwindled to 150. Now it is 450, and the island is prospering principally as a little-advertised summer retreat for mainlanders and a favorite destination for Great Lakes yachtsmen. Both permanent and seasonal residents agree that the Beaver Archipelago is one of the most scenically attractive and refreshing places in the United States.

Although James Strang could be dismissed as only a zany figure in a bizarre episode of little subsequent significance, this has not happened. He and his kingdom have been the subject of many articles in academic journals, and five scholarly books have been written about them. Strang continues to be an instructive man because he so well represents a class of individuals who have repeatedly surfaced in what might paradoxically be called the eccentric mainstream of American history. Some are admired as saintly visionaries, principled idealists, fearless reformers and gentle if loony utopians. Others are despised as dangerous subversives, religious zealots, nasty cultists and charlatans. However they are classified, there have been a lot of "Strangs" (and they keep on coming) but only one has been crowned a king.

St. James Light has been in use ever since Irish immigrants built it in 1856, the year Strang died. Old Coast Guard station (right) is now the Town Hall.

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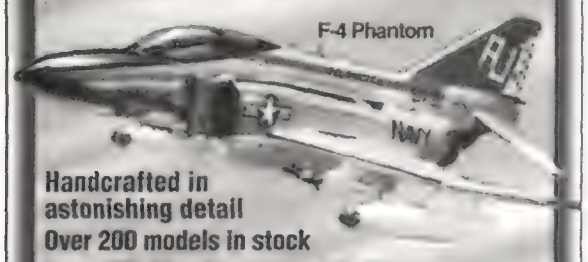

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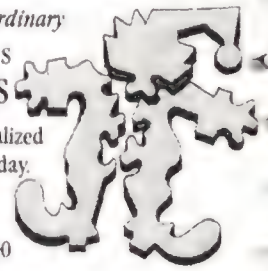

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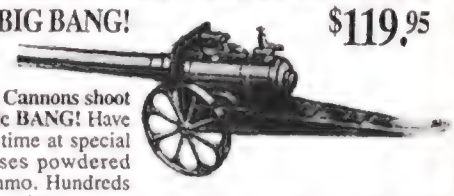

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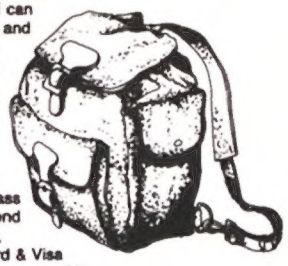

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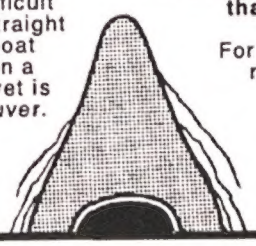

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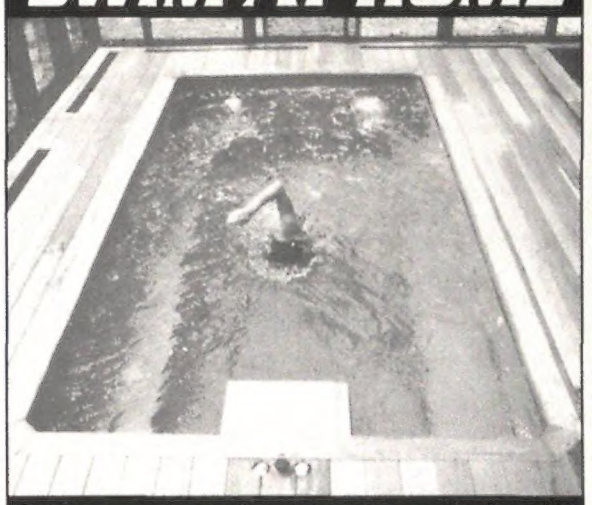

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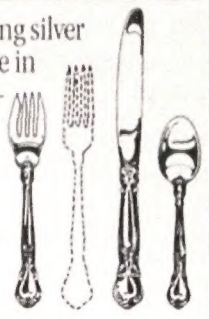

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By Bruce Watson

My psychiatrist tells me I have 'sci-fitis' . . . but he *is one of* them!

On an ordinary April day the weirdness came to town.

Mine is a small, pleasant town, much like one you'd see in the movies. Nothing ever happens here. But one day some students at our elementary school went home with headaches. Our boys and girls were usually so healthy. What had gotten into them? Then teachers began to cough and wheeze. When the principal broke out in hives, the local health authorities closed the school to investigate. "No big deal," a team of experts said. "Just a fungus in the carpets. Pretty common these days." Everyone was satisfied, except me.

I grew up on B-movie science fiction. Raised on classics like *The Creature From Planet Zork* and *The Beast with 1,000 Toes*, I knew that truth was often stranger than science fiction. This fungus plot seemed familiar. Hadn't I seen the same scenario in *It Came From Beyond the Sun*, the movie in which a fungus from a distant asteroid chokes a small, pleasant town? What was going on here?

As our authorities debated how to kill it, the fungus grew out of the school carpet and up the walls. I knew there was only one solution. First we'd need a Professor with a white lab coat. Then we'd find the Town Blonde and an Average Guy With Heroic Shoulders. At a critical moment, we'd have the Professor turn to the Hero and say, "I'm afraid there's nothing that ordinary science can do, Steve. This thing's a monster!" Cue Steve, who slams his fist on the table. The Blonde screams. Then the Army rolls in tanks and blasts the fungus to smithereens. THE END.

But movies were not reality . . . not yet. In real life we got some federal cleanup money and scoured the school. The fungus was gone. Everyone was relieved, except me. I knew that once life began imitating B-movies, it was just . . . *The Beginning of the End* (the 1957 classic in which giant locusts eat Chicago, then cast a hungry eye on Milwaukee).

Soon my daughter started muttering "Heh heh, cool, heh heh!" She was normally such an articulate child. Then right next door, 7-year-old Jason turned on MTV and began gyrating around the room. Soon, children all over our pleasant town were thrashing to music, "talking trash," behaving like fiends. The P.T.A. blamed it on cable TV, but I knew we were living in . . . *The Village of the Damned* (the 1960 masterpiece in which aliens possess a town's children and make their eyes glow).

I couldn't remember how that damned village saved its children so I went to the P.T.A. meeting and said, "I'm afraid there's nothing that ordinary science can do, Steve. This thing's a monster!" Sadly, only a few parents agreed with my plan to blow the kids to smithereens. Some limited their kids to 40 hours of TV a week, but the rest watched helplessly as pleasant children turned into garbage-mouths.

Next the newspapers declared that it was no longer safe to eat anything! According to scientists, all our food—butter, margarine, meat, eggs, sugar, apples—contained *chemicals!* Some blamed the media for fear mongering, but I knew we were living in *Attack of the Giant Experts* (aliens plant electrodes in scientists' necks to control a small Midwestern town). In the sequel, *The Giant Experts Go to Washington*, the aliens brainwash Congress by implanting American-flag lapel pins in Congressmen's coats. The nation is saved when they herd all scientists and politicians into the Grand Canyon and call in the Army. THE END.

Blowing up experts may have worked in the 1950s, but these days there would be environmental concerns and lawsuits from lawyers named Steve. We were defenseless, bombarded by the latest studies and government reports!

What was happening? I turned to my wife and said, "You've got to believe me! The fungus, the fiendish kids, the evil experts . . . *I've seen all this before!*" She sent me to a psychiatrist who said I had *sci-fitis*, the delusion that life imitates B-movies. "But it's all true!" I said. "Don't you read the papers?" I whipped out the evening paper. All over the country, UFOs were abducting law-abiding citizens, just like in *Invaders from Mars*. Supermarkets were selling genetically grown veggies (*Attack of the Killer Tomatoes*). Millions were watching brain-killing TV shows and reading cat books (*Invasion of the Mind Snatchers*). "We've got to do something!" I told the shrink. Then I saw the electrodes in his neck.

The next morning I awoke, showered and went to the mirror. My God! Was that me? Once so young and striking, I had become . . . *The Incredible Aging Man* (the thriller in which a man looks more like his father every day). Then I checked the calendar. It was *1995*. Whenever an old sci-fi movie took place in the future, somewhere in the last reel Steve turned to the Professor and said, "But Professor Dreen! Surely you have a weapon that can keep the Monster from devouring Elm City! After all, it's 1995!" And now it was!

Every day I tell my daughter to turn off the TV. I tell my wife to skip the warnings, to eat anything she wants. I tell people our politicians are possessed. No one believes me. I'm afraid there's nothing that ordinary science can do. I slam my fist on the table. In the distance a blonde screams. Has anyone tried calling in the Army? THE END. Or is it just . . . the beginning?

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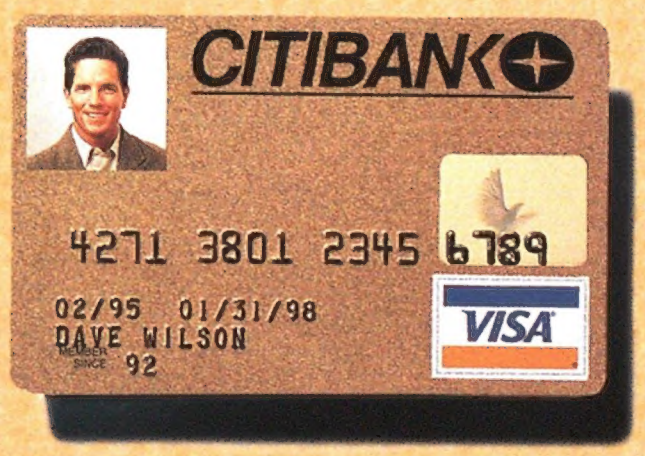
And a boy!



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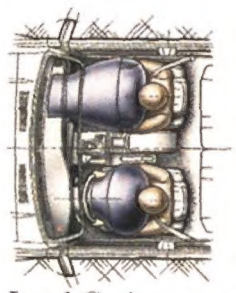

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